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MAY 1993

SOFTWARE PRODUCTIVITY

**IS THERE LIGHT
AT THE END OF
THE DEVELOPMENT
TUNNEL?**

FRONT-END COLLISION?

**Break The GUI
Gridlock With User
Interface Design Tools**

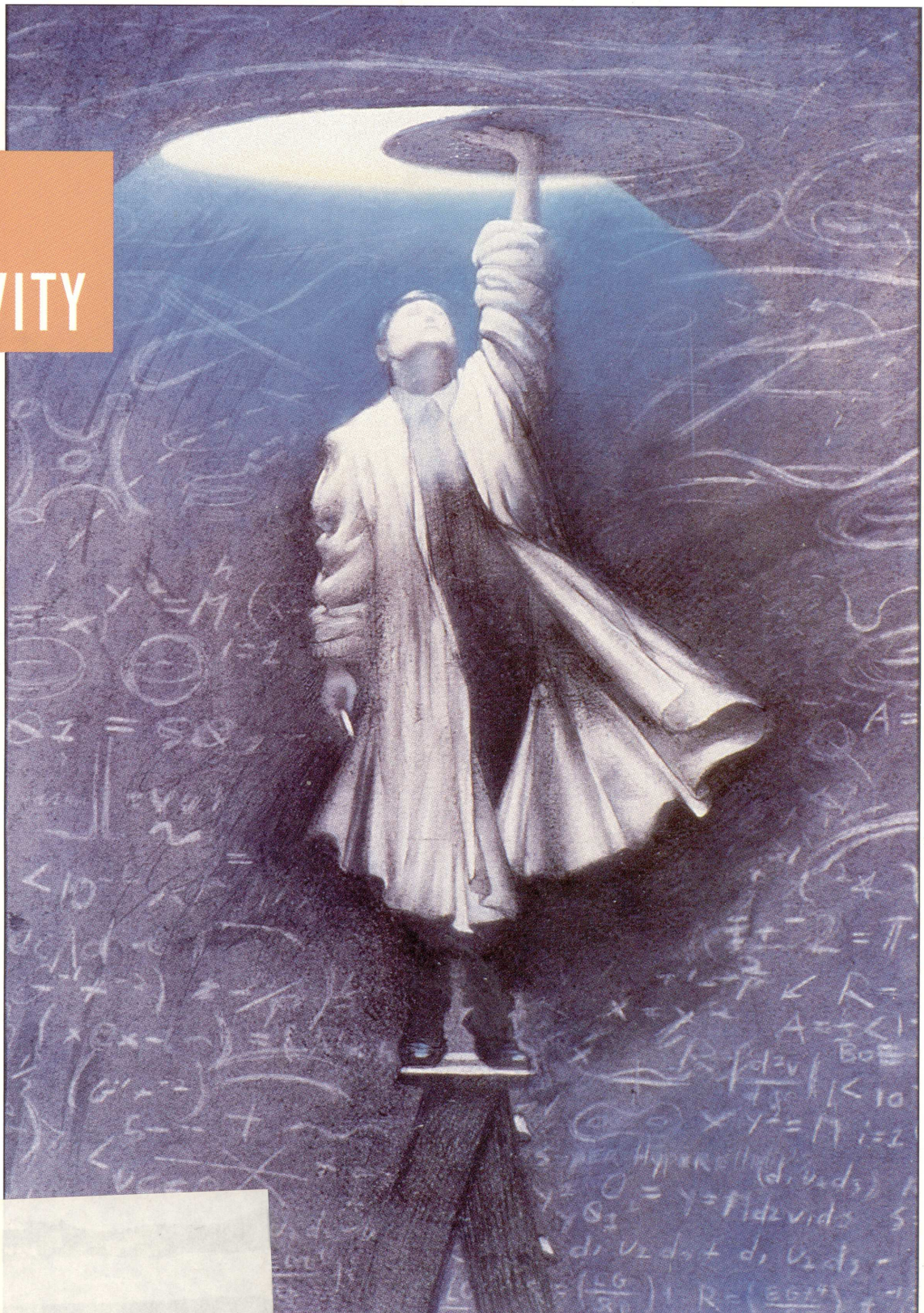
INDUSTRY WATCH

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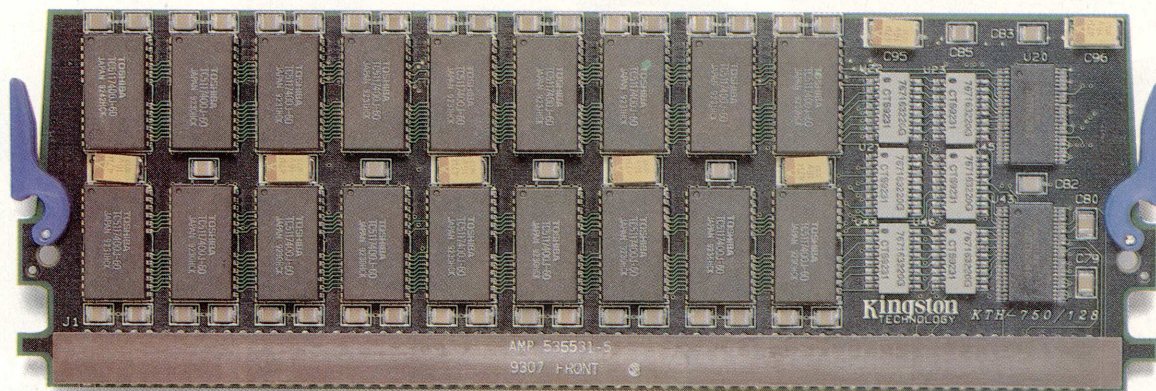
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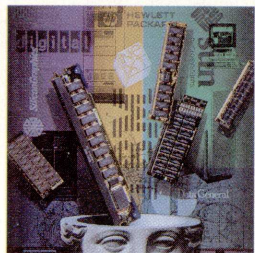
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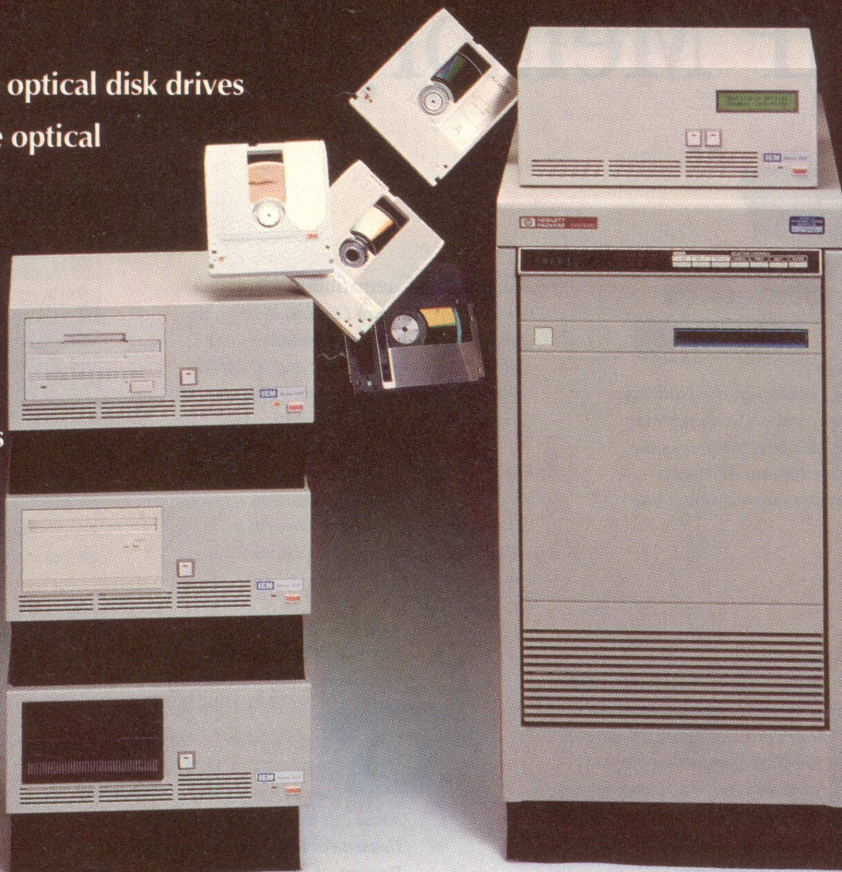
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BEYOND THE GUI GRIDLOCK*By Paula Jacobs*

User interface design tools and user interface management systems help software developers survive the trials of creating and porting GUI-based applications. As the GUI builder market becomes saturated with new vendors and products, there's sure to be a size and shape for every application development task. The trick is to choose the tool most suitable to your development environment.

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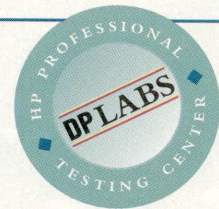
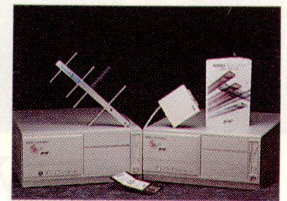
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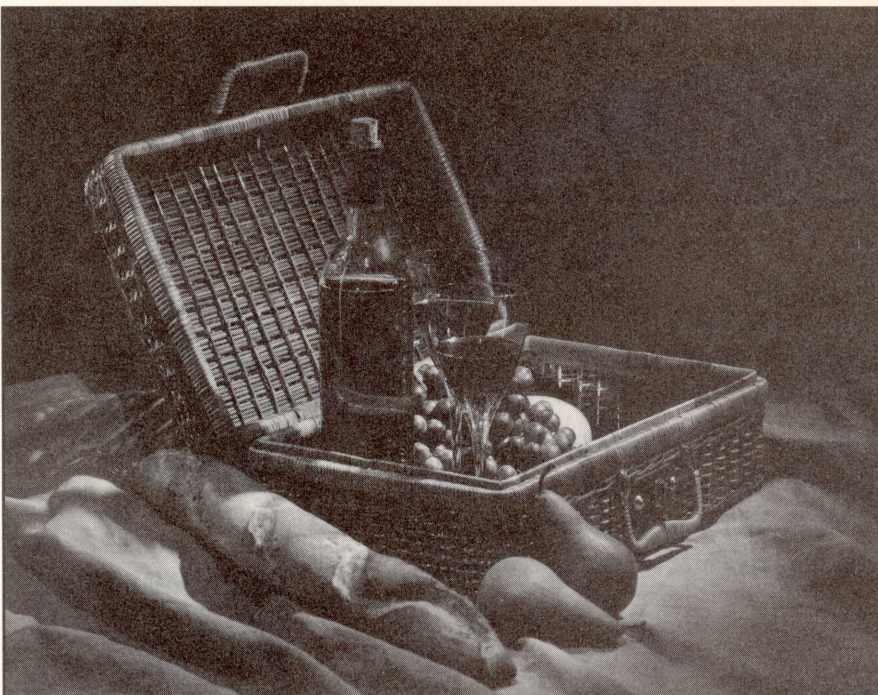
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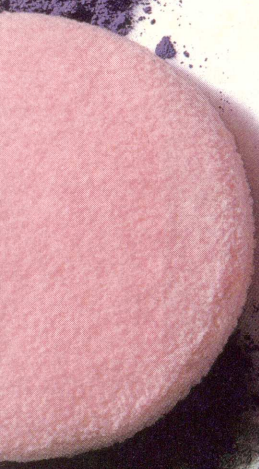
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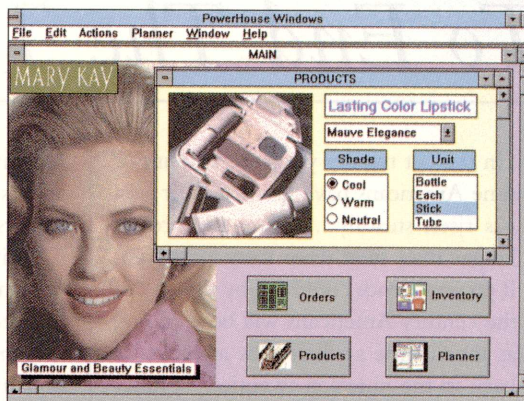
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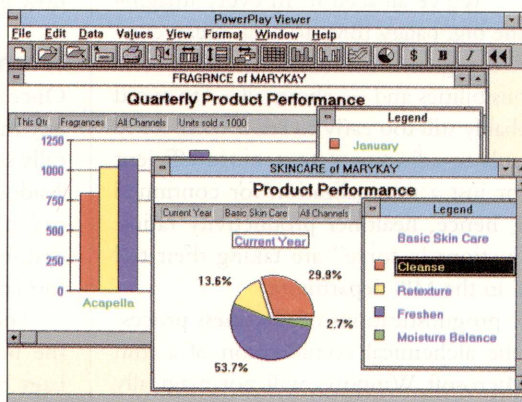
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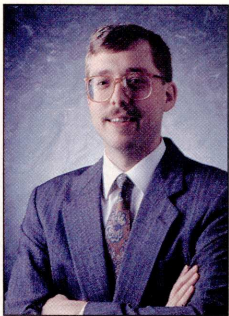
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Time To End The Time Squeeze?



By Don Marks



"In the last twenty years the amount of time Americans have spent at their jobs has risen steadily....Hours are already longer than they were forty years ago. If present trends continue, by the end of the century Americans will be spending as much time at their jobs as they did back in the nineteen twenties."—Juliet B. Schor, *The Overworked American: The Unexpected Decline Of Leisure*, Basic Books, 1992.

We've all seen it. In every imaginable organization, from the big, baggy IBMs to lean, mean consulting outfits, people are being asked to do more with less, to shoulder additional responsibilities and — above all — to avoid hiring extra help. It's probably still too early to tell if what we're living through is a difficult re-adjustment to a more efficient way of doing business, or just a rationalization for continued staff reductions — and, hence, healthier productivity ratios. Whatever the case, "reductions in force" are taking their toll everywhere — especially in the MIS department.

Despite the optimistic prognostications of "business process re-engineering" gurus, the alchemical combination of a thin staff, tight budget and Microsoft Windows will not magically improve productivity. In fact, if corporations continue to sacrifice manpower and investment in return for short-term cost-savings, the end-result of our present re-engineering efforts will be at best a disappointment, at worst a tragic fiasco. Without adequate capitalization, many quality products and services will be lost, promising careers abbreviated and valuable organizations depleted of their best and brightest personnel.

Downsizing's Double-Bind

Even as the corporate euphemism brigades concentrate on "reducing direct labor involvement," companies are simultaneously making profound, strategic changes to their information infrastructures. Unfortunately, the people left making these decisions are too often the demoralized remnants of a once thriving MIS department, now forced to labor under extreme time and resource constraints.

Ironically, downsized MIS organizations that previously pursued greater vendor independence through open systems are now finding themselves caught in a double-bind. Without the necessary resources to design and manage supposedly lower cost distributed information systems, these prodigal customers are

returning to hardware vendors for additional consulting, packaged solutions and system integration advice. But to the customers' chagrin, the vendors, too, have changed with the times.

With profit margins wrung dry from commodity-style open systems pricing, most larger system vendors, HP included, have divided their energies between low-overhead volume sales — shipping maximum silicon at minimum cost — and high-priced, high-margin professional services. HP, in effort to streamline its own organization, has dramatically reduced its direct sales force and set parsimonious limits on the kinds and amounts of free, pre-sales consulting it provides. Customers, large or small, now get what they pay for — precisely — and little more.

From Science To Cynicism

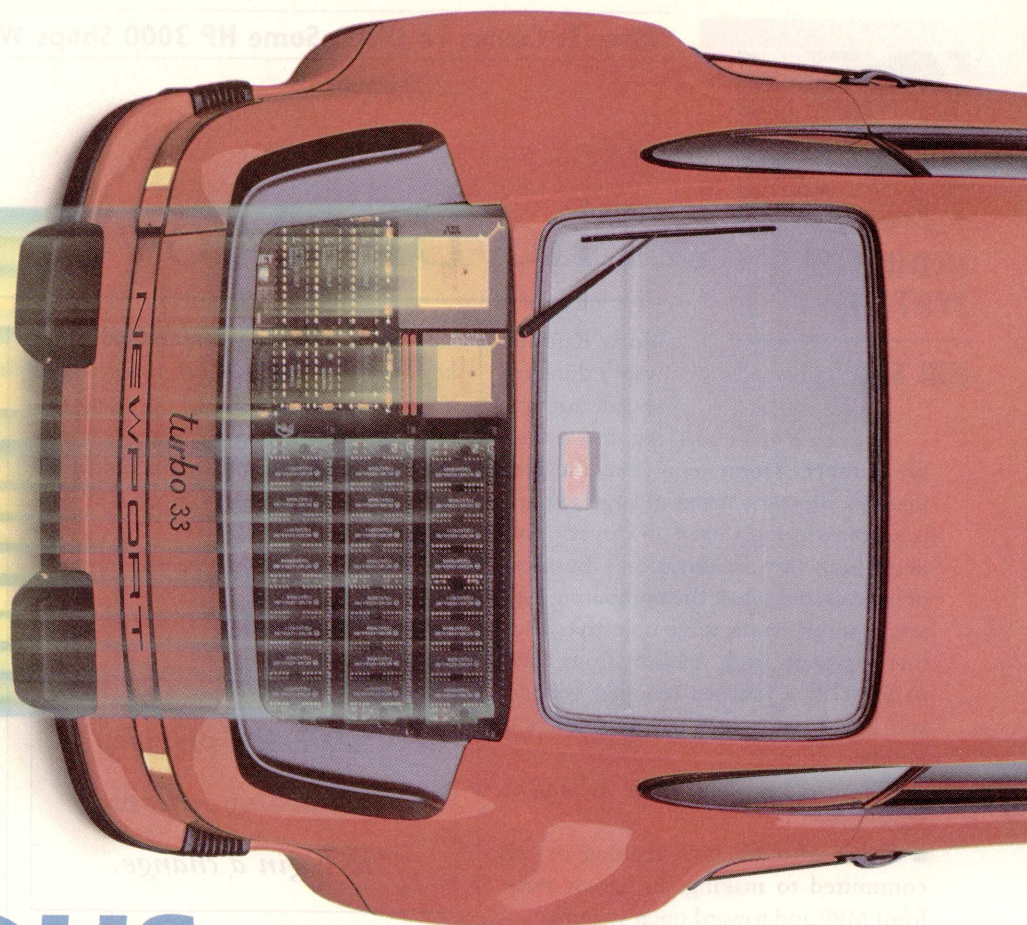
Once upon a time, the stereotype of the information technology manager was the lab-coated computer scientist — hermetically sealed behind the glass walls of a futuristic computer room, assiduously noting the status of blinking lights across the control panel of a vast, inscrutable electronic brain. He was the epitome of corporate power in the optimistic, labor-saving Information Age.

Today the emerging image of the IT professional is that of the beleaguered network manager in rumpled casual clothes, bags below his eyes from pulling all-nighters, plunked down in a crowded corporate cubical amid incompatible cables, hubs, routers, muxes, pizza boxes, etc. — and surrounded by irate users. He's the epitome of the time-strapped worker-bee in our cynical, stressed-out Open Systems Era.

Doubtless, we in corporate America will continue to muddle through our downsizing phase. And in all likelihood, we'll continue to increase the number of hours we work, even as the pace of office automation and technological change accelerate. But let's at least be honest about one thing: For many, this will not be a pleasant or desirable course.

Juliet B. Schor, whose telling book, *The Overworked American*, I quoted at the outset, notes that even as most employed Americans are working more hours than they have in 40 years, a full 20 percent of our labor force is underemployed, unable to secure enough hours to make ends meet. And, for the first time in history, many of those out of work have extensive computer skills and high-tech experience. Meanwhile, crippled MIS departments can't manage to implement new information systems quickly enough to solve our basic business problems. Perhaps it's time that corporate America re-examined its priorities.

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INDUSTRY WATCH

Bill Sharp

When It Comes To UNIX, Some HP 3000 Shops Would Rather Switch Than Fight

The Big Move

Norb Kubilus wasn't thinking about migrating. It was simply

another system transition, the sort that this 10-year veteran of large systems has been through over and over. You determine the organization's business objectives and select the computing system that best meets those objectives. But that transition took his firm from MPE to HP-UX, a journey to open systems and lower costs pondered by increasing numbers of users.

There seem to be three groups of MPE users:

- Those who are now making or are committed to making the move away from MPE and toward open systems.
- Those who expect to gradually move, mixing MPE and UNIX along the way.
- Those who intend to stay on the HP 3000 running MPE.

I readily admit this column is not a scientific sample. I tried to find at least one user in each category, but instead, I found three users moving systems at varying paces toward UNIX.

Kubilus is vice president and chief information officer for BCM Inc., a large environmental consulting firm in Plymouth Meeting, PA. In 1991 BCM was coming to the end of a long relationship with the HP 3000. The company had been using the 3000 and MPE since 1978 and was nearing the expiration of a five-year lease. Like increasing numbers of HP 3000 customers, BCM was deciding whether to stay with the HP 3000, or how to migrate if that was the choice.

"We had made a decision to move to a client-server environment," says Kubilus. "One of the parts of that was the enterprise server, the one box with all the corporate systems for financial,

laboratory, human resources and other key areas. The HP 3000 was not going to be that box. It had a closed operating system, lacked some of the more popular database products, and was incompatible with some database servers on our network."

*The cost differentials
between HP-UX and
MPE/iX provide
compelling reasons
to begin a change.*

BCM compared three RISC-based systems: the HP 3000/947LX running MPE XL, HP 9000/857S running HP-UX and the IBM RS/6000/560 running AIX (IBM's version of UNIX). "All three were roughly the same size and power consumption, and complied with industry standards," says Kubilus. IBM had a slight edge on memory capacity, but the 9000 had almost a 2 to 1 advantage in disk space and supported both LAN Manager X and NetWare, neither of which was supported at the time on the RS/6000, he recalls.

But while the HP 9000 hardware and operating system looked like the choice, applications are typically the deciding factors these days. Moving from MPE V to MPE XL on the 3000 would have reduced porting to a two-week task, but Kubilus also wanted to move from hierarchical to relational database files and avoid being "stuck with HP ALLBASE." In addition, he found several software packages that simply could not be run on MPE, but were available for HP-UX. HP 9000 and HP-UX took the sale, and because of price breaks Kubilus opted for the HP 9000/867.

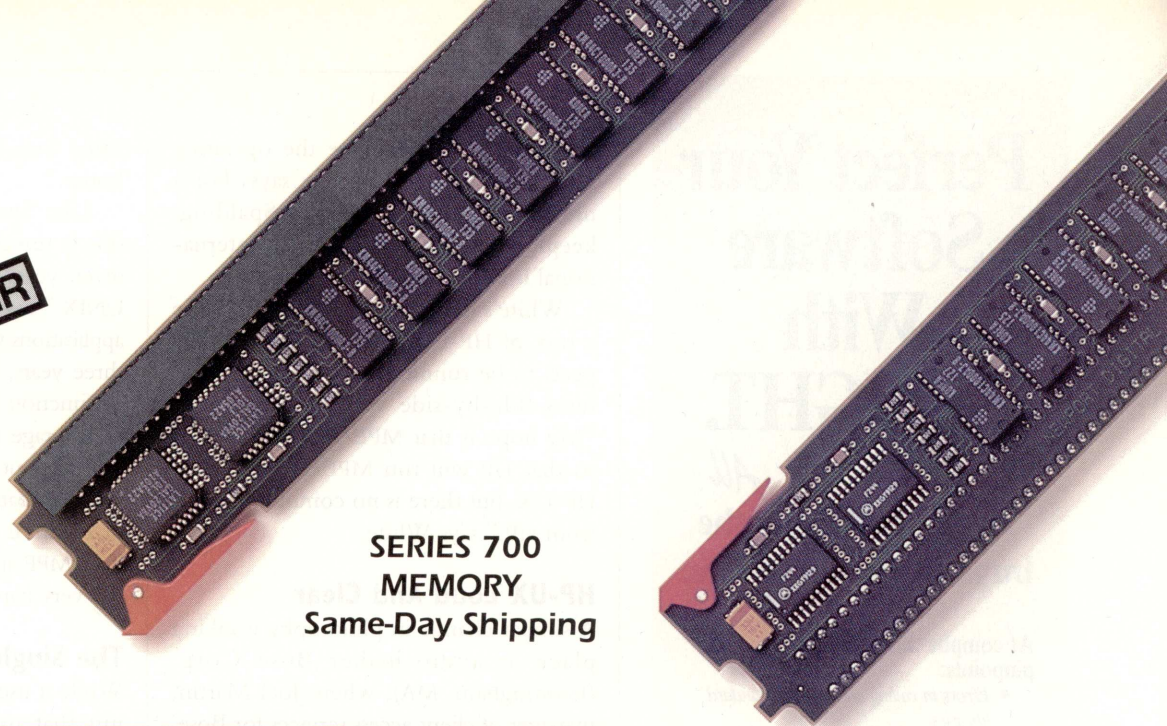
The migration took between six and seven months from planning to completion. Quips Kubilus, "The surprise was that it took only that long — anybody looking for a quick conversion is deluding themselves. It was easier for us as some of the code was written in Powerhouse from Cognos. The toughest part was moving to the relational database structure, mapping across and populating those data structures."

The end result at BCM, according to Kubilus, is "ecstatic" users. He notes that some jobs that used to take six to eight hours now run in 45 minutes. "The machine is fast." On the downside, HP dropped the ball on support for problems with its OpenSpool print spooler, which created some frustrating experiences for users of the new system.

Spalding Slides Into UNIX

But while some firms run quickly through migration, others feel compelled to take a more gradual approach. I first interviewed Bard White more than two years ago, when the MIS director at Spalding Sports Worldwide (Chicopee, MA) expected to stay on MPE—period. Spalding took delivery on one of the first business class HP 3000 systems shipped last year. "I was one of those who said they would stay with MPE and UNIX wouldn't develop, but it continues to grow," says White. "Holding the line against UNIX is foolish. There have been problems with UNIX, but they are being solved, and UNIX costs are down."

UNIX, says White, is not being quickly embraced by U.S. data centers and MIS directors, but he finds the cost differentials between HP-UX and MPE/iX to be compelling reasons to begin a change. "The cost of UNIX is a factor of two to three less." Further, Europe is adopting UNIX at a much more rapid



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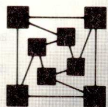
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pace, and it seems to be the operating system of choice there, he says. For a multinational firm such as Spalding, keeping systems similar across international boundaries is a big concern.

White's direction for Spalding will be a mix of HP-UX and MPE/iX. He expects to be running both operating systems side-by-side within three years. "My hope is that MPE/iX will open up so that HP will run MPE/iX on top of HP-UX, but there is no commitment yet from HP," says White.

HP-UX Loud And Clear

A similar change in philosophy is taking place at audio-maker Bose Corp. (Framingham, MA), where Joel Martin, manager of client access services for Bose, plans and manages new client-server systems. Martin foresees changes in his firm's use of the HP 3000, where these minicomputer systems have been a part of Bose operations since the Series II in the mid-1970s.

"We will move to UNIX if it makes good business sense, and increasingly, it is making good business sense," says Martin. He cites these as reasons to consider UNIX:

■ Increasing amounts of software available for UNIX. "When we go to user groups or meetings, vendors are making more ports to UNIX than onto MPE, and we see HP adding UNIX facilities to MPE," Martin comments.

■ All of the major and minor database vendors are on UNIX and only a handful are on MPE. Says Martin, "Often, the application we want is on the UNIX box instead."

■ Lower system prices are pulling hard at systems managers dedicated to reducing their costs. "When you get it all done, there is not as big a cost differential between MPE and UNIX as people think, but there is a difference. HP is more aggressive in pricing UNIX machines," says Martin.

And when the time comes to retire some of Bose's 10 HP 3000 systems in favor of the other OS flavor, Martin says, "HP will not have a lock on UNIX machines for us. We have some HP and

some Sun Microsystems computers in house."

Like Spalding, Bose plans to move slowly toward UNIX. "Probably in six or seven years we will be about 80 percent UNIX," says Martin. Even though many applications will move to UNIX in the next three years, he expects some to continue to function best on MPE/iX. "We want to leverage the advantages on the UNIX side without risking throwing the baby out with the bath water. I think there is still a fit for MPE for the indefinite future. We have MPE applications running that we are still very happy with."

The Single Kernel Theory

While it used to be a no-no in HP to admit that users might switch to UNIX from the golden goose MPE family, this taboo is falling away. Application Support Division R&D Manager Tony Engberg notes that based on his constant contact with the HP 3000 customer base, "Clearly the move to UNIX is accelerating. The early adopters have succeeded and the next wave is picking up on the trend."

Although he staunchly defends the worth of the HP 3000 line, HP's Rich Sevcik lends further credence to rumors of movement toward the HP 9000 family. Sevcik, now manager of both HP 3000 and HP 9000 products, says the 3000 continues to pick up new customers in manufacturing and state and local government. However, he also notes that HP is evaluating a microkernel scheme that would provide one underlying operating system core for all of HP's computer lines, with different operating system shells depending on customer preference.

Sevcik said such a kernel might provide not only for HP-UX and MPE/iX, but for future operating systems as well, specifically noting Microsoft NT. "We have a number of research projects looking at what that kernel should be," he says. "So far, our research indicates that this would be an extremely large project. I don't want to predict what the future might hold for now, but it's something we are tracking carefully."

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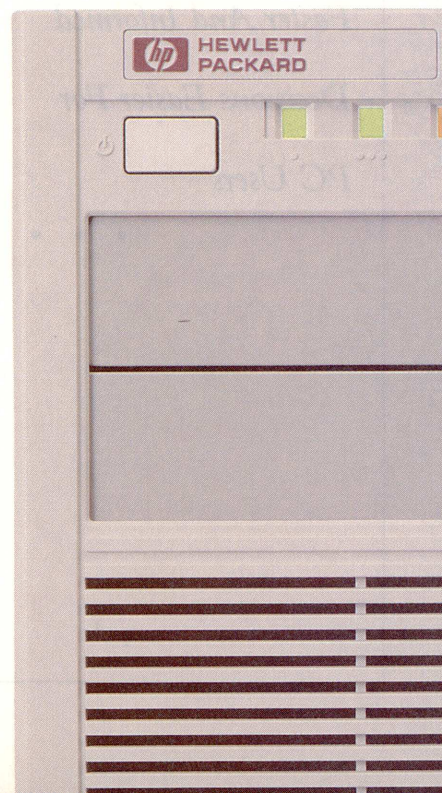
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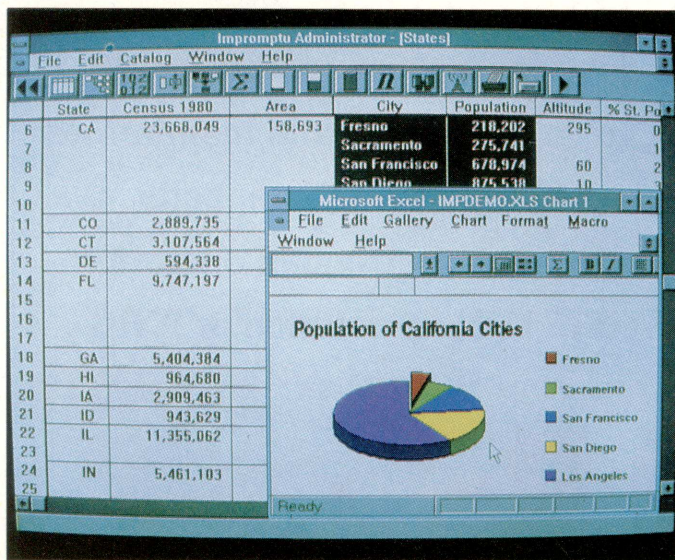
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Quick Questions



*Cognos' Impromptu
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The availability of advanced information systems in the '90s will provide businesses increased opportunities to be more efficient, productive and competitive in the 21st century. Cognos Corp. (Burlington, MA) offers two desktop products, PowerPlay and Impromptu, that can ease data access and help you make quicker, more informed decisions on projects and issues that could mold the future of your company.

PowerPlay is a PC/Windows- and Mac-based EIS (Executive Information System) for analyzing graphical views of summarized business data. Impromptu is a PC/Windows-based SQL data access and reporting tool that uses a GUI and icon-driven interface for query selection. With Impromptu, there's no need to know SQL syntax or be familiar with database or network navigation to get the information you need.

It's through the Impromptu Catalog that you can package data in familiar business terms instead of the arcane physical structure and naming conventions of tables and fields in the database.

Impromptu and PowerPlay work together in that you can export query results from Impromptu as PowerPlay data files. Once your data is in PowerPlay, you can use the EIS features to define trends and examine data relationships. The same business terms you applied to your Impromptu queries will be replicated in PowerPlay, helping to alleviate the learning curve.

According to Judith Hurwitz, president of Hurwitz Consulting Group, "Conventional query tools usually require some knowledge of SQL and table joins. A programmer might find this easy, but it's not intuitive for the business user. Impromptu is a tool that business people [can] actually use."

Impromptu also features a Query Bar that automatically performs all SQL query operations such as sorting; grouping; calculating minimum, average and maximum values; totals, subtotals and averages and; counting occurrences of specific values. Using the Query Bar you can point and click to menus and icons and Impromptu interprets and queries the database for you.

You can capture local snapshots of queries and manipulate the data without being connected to the data-

base. This makes remote access and further manipulation possible.

Cache mode makes it possible to give many users access to corporate data without overwhelming system resources. And, with Impromptu data queries, network traffic and database processing loads are reduced.

Query results can be incorporated into other PC tools or exported to other file formats such as Microsoft Excel, Lotus 1-2-3 and delimited ASCII text. Information is displayed in a fashion easily understood by non-technical users in the Microsoft Windows environment.

George Blair, computer integrated engineering team leader at Monsanto, a producer of agricultural products, explains, "We have eight engineers who are experienced with PC applications, and they found Impromptu as easy to learn and use as Lotus 1-2-3. Popdown menus give you logical choices common to PC users."

Impromptu supports Oracle via SQL*Net on all platforms supported by Oracle; Sybase SQL Server; Microsoft SQL Server; Borland InterBase; Digital Rdb; and HP ALLBASE/SQL. Price is \$595. — Andrea Zavod, Associate Editor

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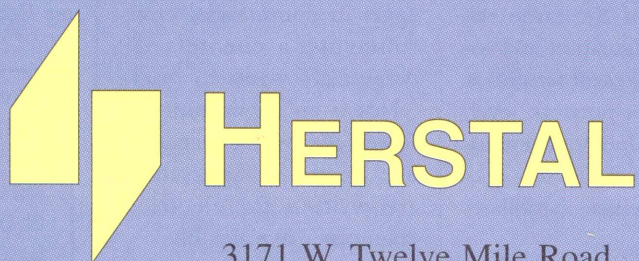
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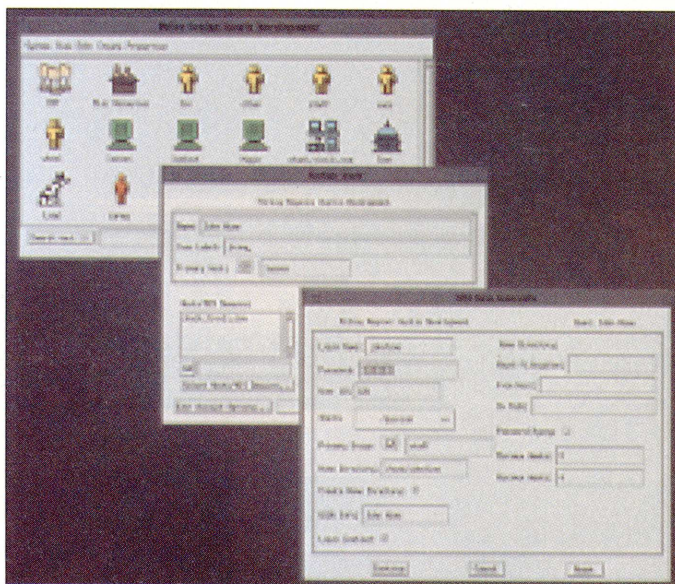
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Tivoli Systems Inc. and HP announced the Tivoli Management Environment (TME) Release 1.5 for HP's PA-RISC-based HP-UX workstations and servers. Available on Sun SPARC for years, TME was scheduled for release on the HP 9000 in late March. Despite its potential rivalry with HP OpenView, Tivoli's success on Sun made it a coveted trophy for HP's own workstation application shelf.

TME provides PA-RISC workstation users with a complementary product to the overall HP OpenView network and system management framework. But it also competes directly with some OpenView products, providing many of the same resource, configuration and security management features at the local area network level. Unlike the OpenView framework, however, Tivoli's network management capabilities

do not (as yet) extend to wide-area enterprise networks.

Using one set of tools, TME users manage workstations distributed across a network and servers running under various UNIX platforms. TME includes the object-oriented Tivoli Management Framework, graphical and command-line user interfaces and management applications. The Framework includes: Tivoli/Works, Tivoli/Courier, Tivoli/Sentry and Tivoli/Application Extension Facility (Tivoli/AEF).

The core application of TME, Tivoli/Works, manages basic system resources, including user accounts, host systems (both workstations and hosts) and NIS directory services. The core helps simplify the development and delegation of system administration.

Tivoli/Courier distributes software updates automatically, providing a uniform network configuration. Through Tivoli/Sentry, managers proactively monitor local and remote computers. Tivoli/AEF provides a toolkit for non-programming system managers who need to modify or customize Tivoli applications.

According to Theresa Ek, program manager for the Tivoli project, HP sees Tivoli as appealing to system managers in commercial environments, a clientele HP desperately wants to reach. "This is an application designed for system managers, like electronics applications are written for electrical engineers," explains Ek.

"Unfortunately," says David Smith, an analyst at International Data Corp., "the Tivoli announcement could have been more positive for end users." Because the announcement stops at joint marketing, and does not include joint development, Smith contends, HP is missing a prime opportunity to provide users with an optimally integrated product and at the same time propel itself forward as an integrated solution vendor.

But HP and Tivoli may in fact be pursuing the course Smith suggests, albeit in an indirect way. Tivoli recently announced a development agreement with software giant (and HP partner) Legent Corp. (Vienna, VA) that may be tantamount to a development deal with HP.

Under that agreement, Legent will license the Tivoli Management Framework, and the two companies together will develop distributed object-oriented system management tools. Meanwhile, in a related agreement, HP and Legent have joined forces to develop enterprise-wide system management solutions for large distributed environments.

Pricing for TME starts at \$37,500 for a 50-node package. — Charlie Simpson, Contributing Editor

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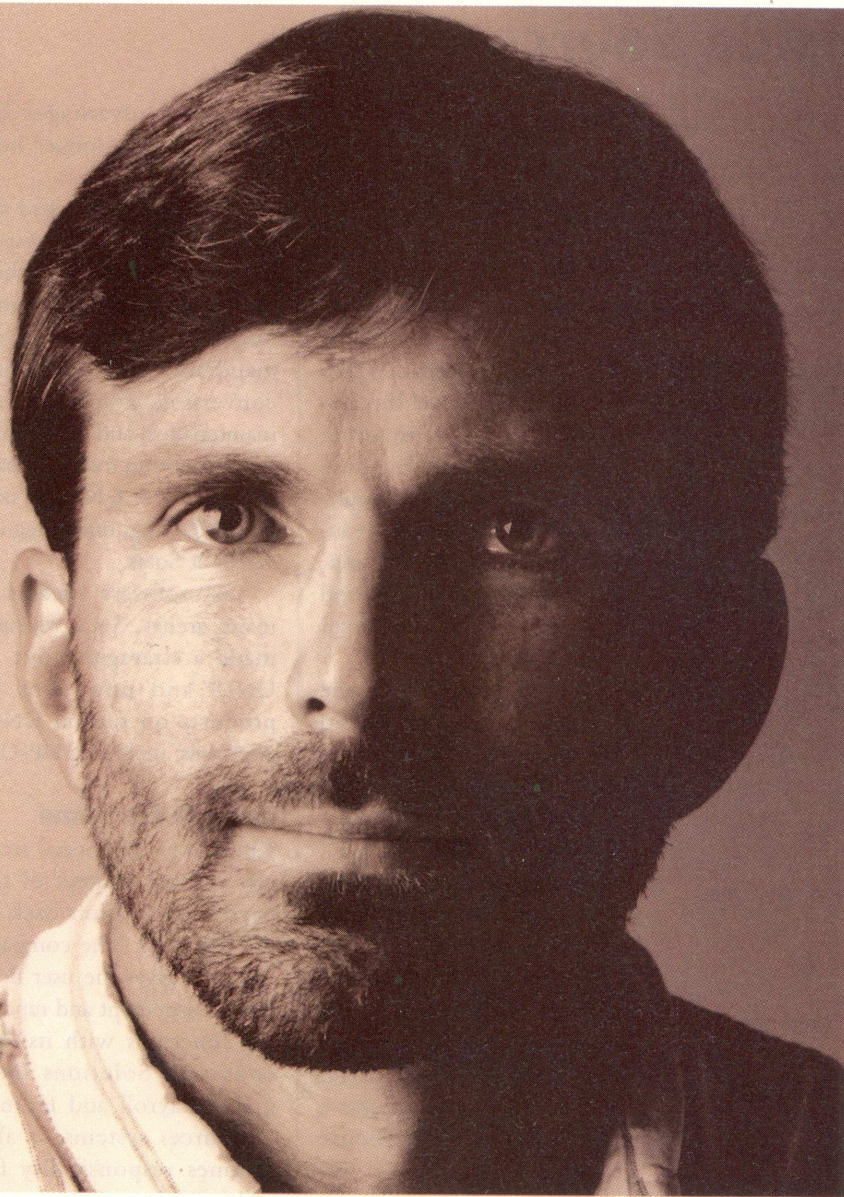
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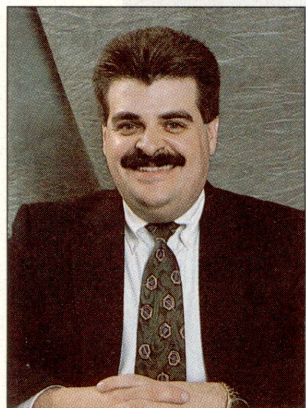


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An Inside Source

Sotas International's "Insourcing" Strategy Capitalizes On Low-Cost Hardware To Bring Financial Applications Back In House



"Years ago, users had the perception that they saved money by outsourcing their payroll application, but those calculations were based on mainframe costs, and aren't valid for computing today — particularly on UNIX."

Arthur J. King
Marketing Director,
Sotas International

For years, companies like Weyburn-Bartel Inc. believed that they were saving time and money by outsourcing their payroll application to a service bureau. But on closer examination, Weyburn-Bartel discovered that it gave up more than it got.

Needing to cut costs, the Grand Haven, MI-based manufacturer of camshafts for the automotive industry, heard the call of Sotas International Inc. (Haverhill, MA), a vendor of financial software, and opted to "insource" rather than outsource.

Promising an investment payback of two years or less, Sotas has taken its "insourcing" message on the road, and is offering businesses a financially viable in-house solution for payroll and human resource applications that also gives them control and flexibility without the associated complexities.

While Sotas is by no means the only vendor to offer an in-house payroll application, the company is making the most noise about insourcing, hosting seminars nationwide.

Touting the price/performance advantages of UNIX and open systems computing, Sotas argues that the once

perceived advantages for outsourcing no longer hold true.

"Years ago, users had the perception that they saved money by outsourcing their payroll application but those calculations were based on mainframe costs, including conversion, education and maintenance, and aren't valid for computing today — particularly on UNIX," says Arthur J. King, marketing director at Sotas.

Like software vendors in many arenas, Sotas recently made a strategic move to UNIX and now runs its products on several UNIX platforms, including HP-UX.

Bring It On Home

King notes that Sotas' strategy returns control of the payroll application back to the customer. The company not only gives the user flexible management and reporting functions with its Accountable Solutions integrated Payroll and Human Resources systems, it also assumes responsibility for addressing tax and compliance issues at both the state and federal levels. "People aren't aware that there are vendors supporting that piece today," says King.

One of the main reasons companies use service bureaus for payroll processing is to avoid the complexities of taxes, make sure that people get paid properly and avoid legal hassles, says Richard Burnett, senior manager with Price Waterhouse. He believes that Sotas is a company

in the right place at the right time. "Insourcing, as presented by Sotas, is a viable solution for companies of 2,000 people or less, because they remove the burden of compliance and cut costs," Burnett says.

According to Burnett, while service bureaus often rope users in with a low per check processing fee, services outside of the basic package often escalate customer costs.

"If you have the right company profile, with limitations of size and complexity, insourcing can be a cost-effective alternative to a service bureau," he says. It also allows companies to regain control over its own destiny, he adds, turning the payroll process away from being an administrative task to becoming an integral strategic part of the way the company does business.

With 300 employees, Weyburn-Bartel expects to see a two to three year payback running the Sotas product in-house on its HP 9000. "I also get more flexibility and can do things when I need to do them," says Siemion. — *Lynn Haber, Contributing Editor*

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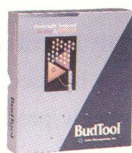


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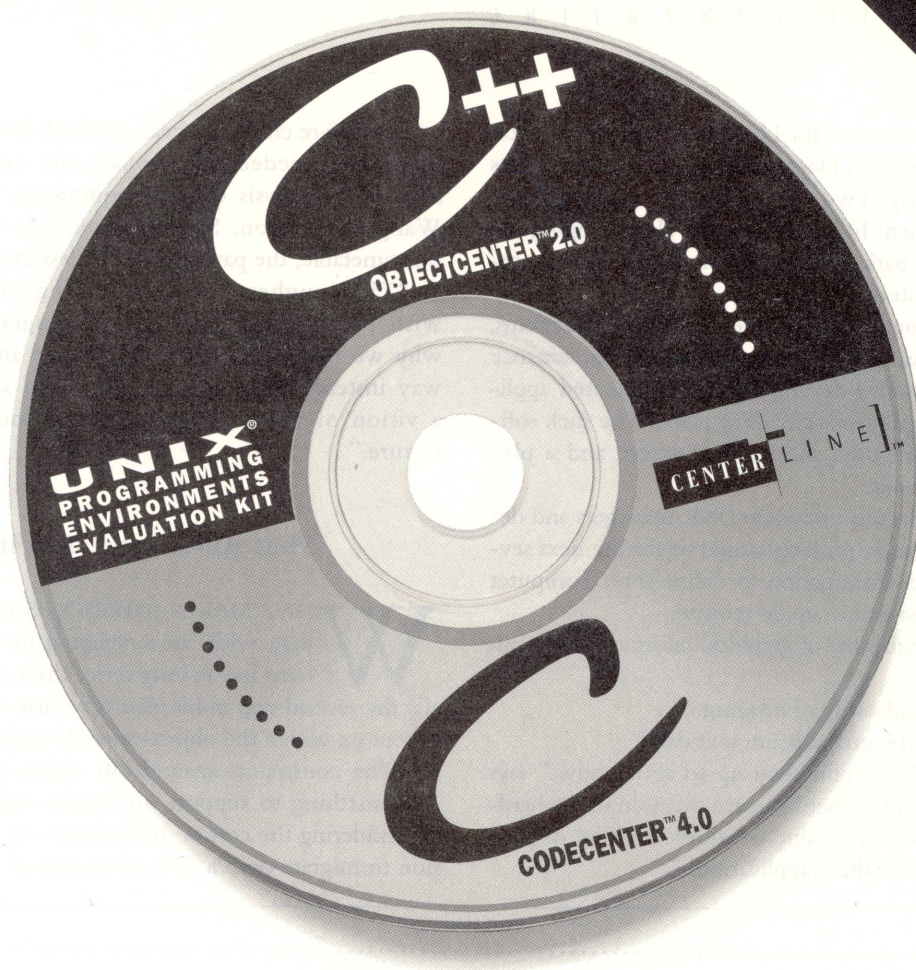
HP Professional's concerted efforts to unlock the dark secrets of object-oriented development environments have revealed that there are not as many users of these environments as vendors would have you believe, and that some of these users literally shun the light of public recognition.

HP reports that users of its new HP Distributed Smalltalk product are asking that their names not be used, ostensibly to protect the competitive advantage the new product represents in their markets. The HP argument goes that in highly competitive markets, such as insurance claims processing, new applications based on particularly effective technology implementations may move a company ahead of other, less savvy claims adjusters. And so, these unheralded users pursue their world-class development work in hiding.

Back in the light of day, meanwhile, other users make their way more gradually toward the nirvana that object-oriented computing represents. Take Utah, for instance. Because computer system prices are dropping precipitously, state and local agencies that used to make do with too little can in some cases now afford a pretty good computer with state-of-the-art technologies. And with some patience, those technologies could even include objects.

BY BILL SHARP

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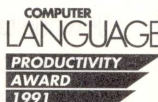
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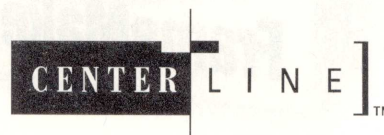


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This is a pleasing realization for Lloyd Johnson, information systems manager for the Utah Department of Natural Resources (DNR) in Salt Lake City. Two aging Wang VS minicomputer systems in the department had been limping along helping the state manage wildlife, park lands, open lands, oil and gas recovery, mining and water resources.

Now, rather than continuing to cope with outdated systems, Johnson is installing faster computers with lower maintenance costs. He also looks toward developing object-oriented applications — once the groundwork is all in place. The slick software must be preceded by a solid infrastructure and a plan supported by management.

Johnson's first task was to interview DNR managers and determine what their strategic projects would be for the next several years. He used this information to define three computer system capabilities these teams would require:

- Department-wide availability of graphical information systems (GIS).
- Department-wide availability of imaging.
- Easy integration of GIS, imaging and text data.

"We've always lagged in technology up to about now," says Johnson. "But the new price/performance situation in the hardware market means that we're able to afford the kind of platforms we need to support these applications."

But before charging ahead, Johnson first defined the amount of money needed to purchase the new systems and ran a payback analysis on new equipment combined with the Wang elimination. Says Johnson, "As long as we stick to our timetable, the payback will be less than two years."

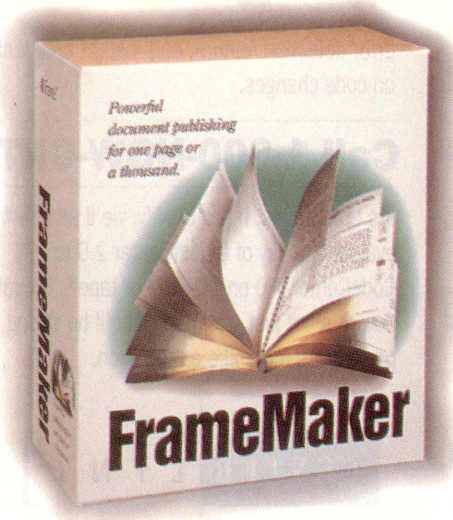
"The toughest part was getting everybody on board with the vision," he adds. "Management had to know why we needed to make the change and why make it this way instead of some other. My own staff needed to have a vision of where we were going and to realize the big picture."

That All-Important First Step

WHAT MAKES JOHNSON'S plans a bit unusual is that, while he's planning for object-oriented systems in the long term, those applications are actually the second step in his plan. The first step is building a solid system on which the object-oriented applications will rest.

"The constraints around our vision were that we had to do something to support our legacy systems," says Johnson. "Considering the cost of maintenance on VS, we made a decision to migrate onto a new environment as soon as possible in

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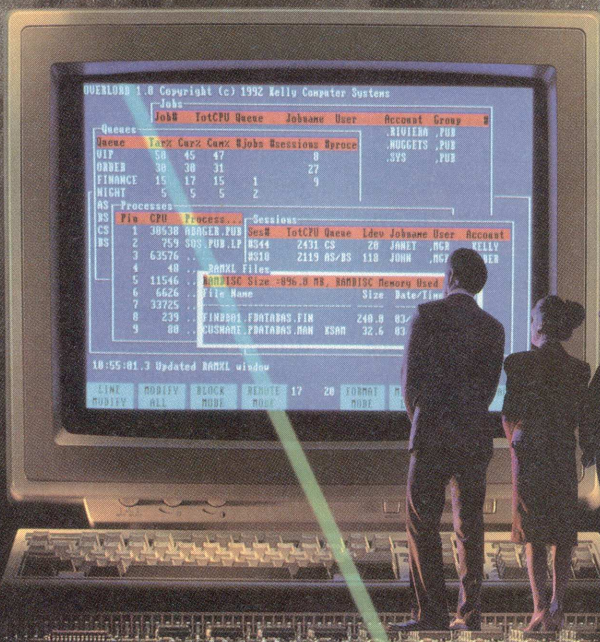
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order to realize the savings from getting rid of the Wang environment. A lot of our legacy systems were on Software AG Natural and the rest were COBOL."

Johnson and company selected the HP 9000 Model 867 running HP-UX to support both the legacy Software AG ADABAS database as well as Informix to serve as the database for new image BLOBS and GIS data. ARC Info is the GIS application of choice for the state of Utah's government.

By the time you read this, Johnson will be hovering in the general vicinity of the power cord for the second Wang system (he's already yanked the first one). When we talked, he was running both the remaining Wang and the new HP system simultaneously, and feeling fairly confident. "When we met our target to get rid of the first Wang, we made believers out of management," he says.

Johnson's approach to managing his project is risk avoidance. By running both systems, he says, "users can go through learning and testing with no risk and we can bring on users a batch at a time. The first ones were the motor pool applications, and they came across clean and are running in the new environment. Now we're doing parks accounting, and by next week they'll be on the new system."

When the new system is running and the second Wang is shut down, says Johnson, "operating costs will be about [one]

fourth of what they were before, with better performance and integration."

The Lure Of Low Cost

DRAMATIC COST REDUCTIONS turn heads and catch eyes in just about every sector of our troubled economy, but no sector is feeling the cost control pinch more than health care. Systems Automation Technologies (SAT), London, is banking on the need for cost containment with its custom CASE tools for health care applications, which were developed using an object-oriented environment from Hamilton Technologies Inc. (Cambridge, MA).

Jutinder Ryatt, director of SAT, likes Hamilton's 001 so much that he had his tool developers use it on their HP 9000 Series 700 workstation to rewrite some of his firm's existing CASE tools. "Application developers tend to use a handful of different tools, and you find that the applications they produce are disjointed because of this," says Ryatt. More complete development environments avoid this problem, he says. He advises choosing an environment that not only supports the application, but also can easily be improved and updated later.

Researcher Kevin Brophy, senior member of the technical

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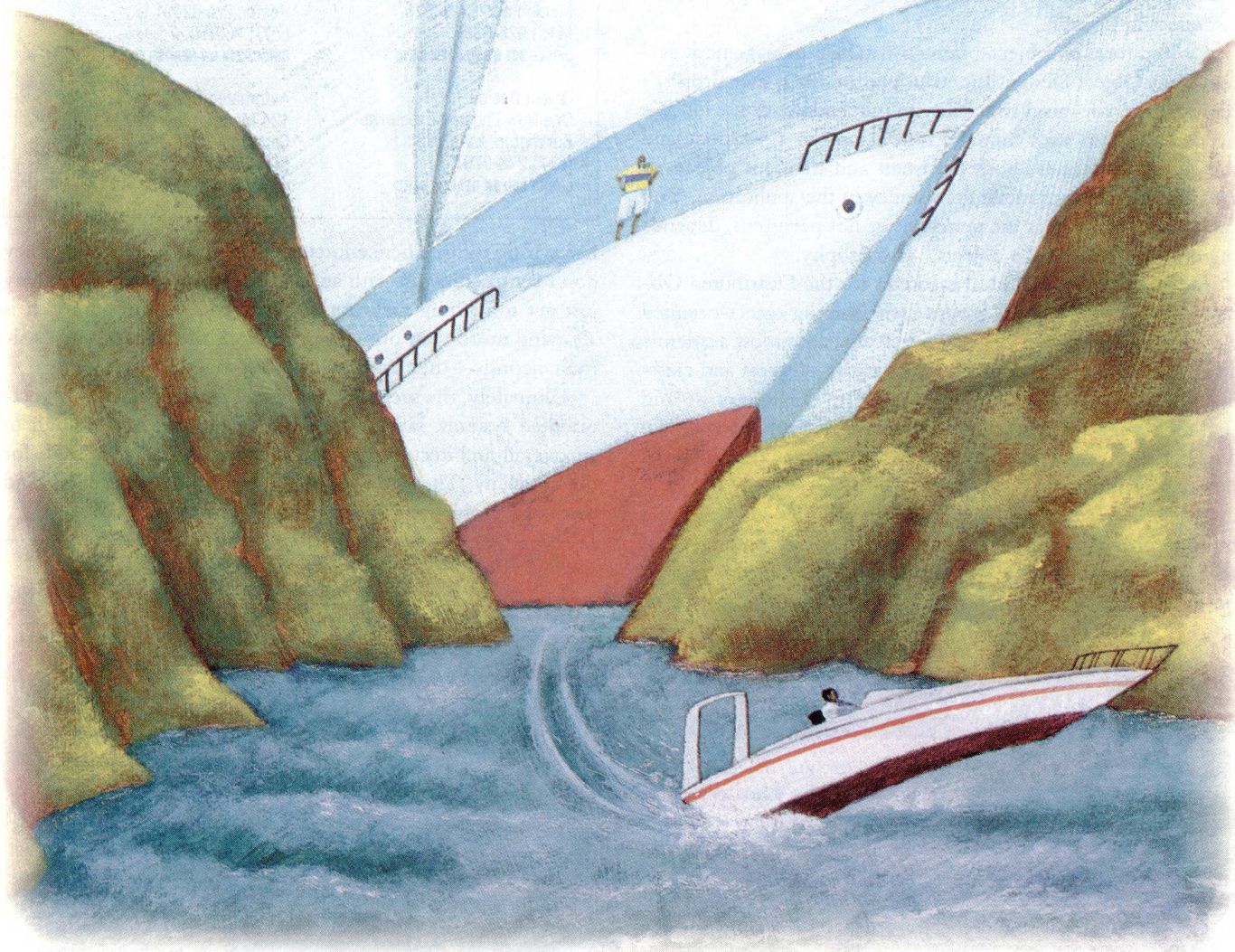
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staff at GTE Laboratories (Waltham, MA), needed a technology to enable linking objects with existing C++ code to help build new GTE telephone systems capabilities with automated linking and updating capabilities. "We wanted a visual programming environment for developing new telephone services, and we were looking for something fast," says Brophy. Many of the object-oriented environments he considered simply weren't fast enough, he says.

ObjectStore, an object-oriented database management system from Object Design, Inc. (Burlington, MA), met Brophy's requirements for speed and ability to mix code with C++. "We needed a system with minimal impact on our C++ code and the ability to connect both persistent and transient objects so they can interact and retain consistency in the application. You can create objects that are persistent or not persistent, depending on how you use the objects," says Brophy.

HP's Ian Fuller, technical marketer for the Distributed Object Computing Program, groups users entering object-oriented development into two classes. "Some take an almost academic attitude," he says. "They analyze the entire business and existing process, then put together a model of the enterprise and find tools to automate it. Most of these efforts get bogged down. The business is often moving too fast for them to create a model before it is outdated."

At the other end of the spectrum is the user who selects a business problem area such as customer service for a target system. "They build a prototype, improve it, then deploy and go on to the next area using the ideas from where the first effort

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had wrong turns. These efforts are being more successful. They don't try to come up with an overwhelming architecture, they just get something that works." One flaw in this approach is allowing more than one group to work on related systems simultaneously—they won't work well together, he cautions.

Ultimately, the secret for success in developing new object-oriented systems, says Fuller, may be to "develop enough of an overall architecture to generate some rules of business for the company. Then you put solutions in place where you find particular problems. Finding the middle way is important."

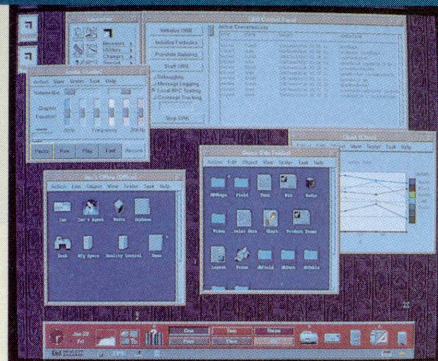
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MAKING SMALLTALK: HP DEBUTS DISTRIBUTED OBJECT ENVIRONMENT

In March, HP announced its entry into the object-oriented development environment competition, HP Distributed Smalltalk. This is HP's implementation of the Object Management Group's CORBA specification for distributed computing applications, rendered as an augmented version of the Smalltalk object-oriented language from ParcPlace Systems Inc., (Sunnyvale, CA). Got that? CORBA stands for common object request broker architecture, a specification that describes how objects are transmitted over networks.

Smalltalk is an object-oriented programming language used in the VisualWorks application development environment from ParcPlace Systems. HP Distributed Smalltalk (see photo) is the brainchild of Jeff Eastman, senior architect with HP's Distributed Computing program in Cupertino, CA. Eastman, a veteran of early HP workstations, Spectrum projects and HP Labs, adapted Smalltalk with his own set of tools designed to enable developers to create applications usable by several workers simultaneously. Eastman did the first round of development for this product a few years ago on his own time using a laptop computer.

Eastman's 1989 G-job turned gradually into a reference implementation for internal product development — until last fall. Recalls Eastman, "That's when some marketing people looked at the



product and asked, 'why aren't we selling this?'" Marketing said there was a market, showings to customers got them all excited, and HP announced its product February 2 — who says this company is too big to move quickly?

Eastman seems to gladly surrender most of the limelight, but loves his product. In the midst of a demonstration during a trade show, he asks, "What other product can do this?" and proceeds to open the demonstration program and introduce an error that brings the demo to a sudden halt with an execution error message. He opens a debugger, allows it to locate the error, makes the fix and tells the program to resume execution. The demonstration dutifully resumes — there is no crash, no loss of data, no loss of place in the program underway. Eastman is proud.

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The Trials Of Creating And Porting


GUI-Based Applications

GUI-based applications are a user's dream, but they can often be a software developer's nightmare. Users are happy to expound on the merits of pointing, clicking, dragging and dropping — for simplicity, ease of use and increased productivity. But talk to anybody developing code for a graphical user interface, and you'll hear a different story. It's not so easy to create an effective GUI presentation with the right windows, controls, menus and dialog boxes. Nor is it a trivial matter to prototype, develop and maintain GUI-based applications.

"The need to simplify the creation of X-based applications is driving interface development technology, which is the fastest growing segment of the X market," says Steve Auditore, president of the X Business Group, a market research firm that specializes in the X Window System. According to Auditore, the market grew to more than \$82 million in revenue in 1992, a 150 percent increase over 1991.

Software Engineer Chris Milam of Bradley Ward Systems (Norcross, GA) agrees. The company uses a GUI interface builder — ICS' Builder Xcessory — to lay out widgets and screens, and generate C hierarchy runtime code on its HP 9000/827 systems, which are used to develop CIM solutions for the food, pharmaceutical and healthcare industries.

"We use mostly the creation function, which frees us from the time-consuming and tedious process of handcoding widget layouts," said Milam. He points to ease of construction as a key feature in selecting an interface builder.



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Dave Wright, Interface Architect product manager at Hewlett-Packard emphasizes that an interface builder speeds the development process, enables graphic construction, and eliminates the need to generate code by hand. Wright says that Interface Architect, HP's OSF/Motif-based graphical user interface builder has experienced a 40 percent to 50 percent growth rate since its introduction two years ago. While most customers are using HP Interface Architect to develop technical applications, Wright notes that demand also has picked up in the commercial sector.

The Right Tool For The Job

CHOOSING AN APPROPRIATE GUI development tool isn't easy, but it doesn't need to be a major struggle, either. As the market becomes saturated with new vendors and products, there's sure to be a size and shape for everyone. The challenge is finding the right product for your needs.

Cambridge Technology Partners (CTP), a Massachusetts-based consultancy, considers several factors when conducting a GUI-builder evaluation for a client. Senior Associate Deirdre Mulligan and Robert Jen, director of CTP's tools department, say that product functionality, performance, support, adherence to standards, cross-platform, vendor reliability, documentation, training, cost and customer references are all key considerations.

Often, the most obvious requirements can be the most difficult, according to CTP. For example, inadequate support and documentation, including training manuals and access to knowledgeable technical support staff, can cause lasting headaches. Also, because new products may not be "bug free," it's important to talk with beta sites before buying and determine whether the product has been through thorough testing.

Here are some questions you may find useful in evaluating a product's functionality:

- What does the user interface do?
- Are there screen-drawing tools?
- Can you link in other code or libraries?
- Can you link into other software products, such as databases?
- Can you create on-line help?
- Does it support foreign languages?
- Is the product only a prototyping tool or can it be used for start-to-finish development work?

Few developers would question the importance of finding a product that supports standards, different platforms and an appropriate "look and feel." Most products available today support ANSI C and OSF/Motif, HP-UX and other popular UNIX platforms, offer adequate response time, and supply many other important features, including good error recovery.

Peter Winston, president of ICS, says, "We don't think that we or any one software vendor can solve every problem." He suggests that users select tools that can help developers build

FEW DEVELOPERS

would question the importance
of finding a product that supports
standards, different platforms and
an appropriate "look and feel."

an open, robust development environment, avoiding proprietary runtime components.

As a start, Winston suggests that users consider the desired output and necessary prerequisites, such as Motif support. Users should try to understand their entire problem, determine their goal, and consider their overall development environment, (e.g., CodeCenter — a popular C development environment from CenterLine Software, Cambridge, MA) or widget support. It's also important to examine carefully a product's user interface and determine what's a realistic level of expertise to learn and to use the product. Finally, he suggests that users evaluate the software, ensure that it adheres to standards, and determine whether the vendor is reliable.

"Developers require a tool with a quick learning curve that does not take a long time to do the job," emphasizes Frans Kes, manager of Teleset Canada's Flight Dynamics Group, which is developing a suite of 40 software applications to maneuver and control six orbiting satellites. His 15-member development team made the switch to NSL's XFaceMaker after finding HP's Interface Architect difficult to use, even after six months. The development team now is using XFaceMaker to design the interface's look and feel and to program the callbacks, although Kes admits even XFaceMaker involved some compromises because of its structure and simpler programming language.

For Hampshire Instruments, a Massachusetts-based manufacturing company, the most important consideration in selecting a GUI builder was the ability to create screens rapidly and visualize the output of Motif-based applications on an HP 9000/720. After evaluating several products, the company selected Alsys' TeleUSE product, according to Peter Nikolla, senior software engineer at Hampshire.

"We find TeleUSE flexible and easy to use, and it allows us to set up hierarchies and build classes of widgets," says Nikolla who recommends that users be familiar with Motif, the X Window System, and the C programming language. "The use of



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the TeleUSE "D" interface (a low-level scripting language) helps us manipulate widgets easily, saving considerable time and effort."

GUI Builders Galore

THE FIRST STEP, HOWEVER, is determining which type of product meets the needs of your application development environment. One helpful approach is to classify GUI interface builders into four categories: interface development tools (IDTs), user interface management systems

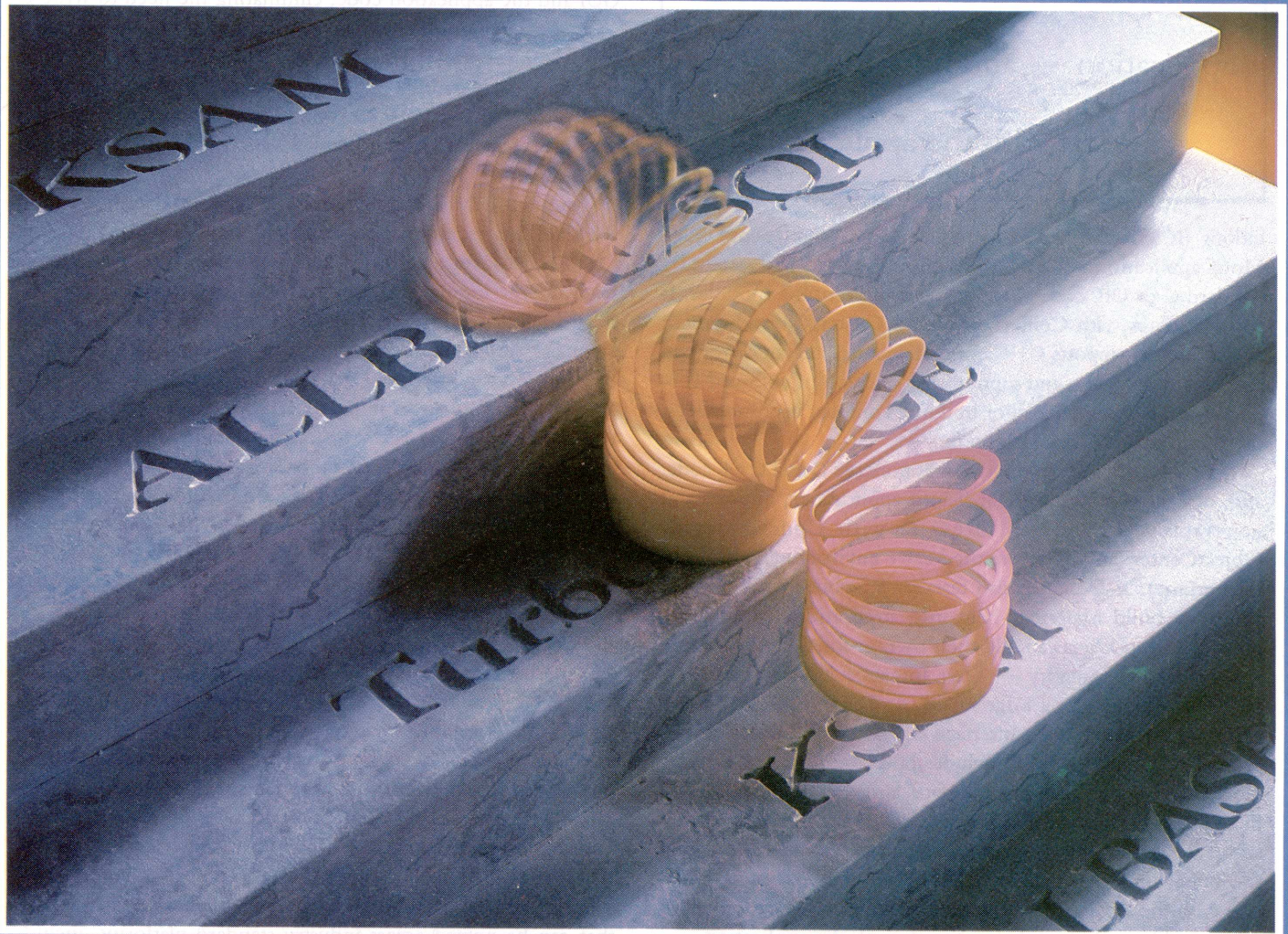
(UIMs), cross-platform development tools, and dynamic data visualization tools (DDTVs).

IDTs are basically graphic layout tools that allow static layout of the user interface portion of an application. With an IDT, software developers can lay out attributes such as position, color or size. The IDT then generates the code to define the interface, either in pure C code or user interface language (UIL). This code creates both the attributes and the widgets, such as dialog and message boxes. Builder Xcessory from Integrated Computer Solutions (ICS) and V.I. Corp.'s X-Designer are examples of IDTs for the HP platform.

The current IDT market leader is Integrated Computer So-

Company/Product	Code Generation	Widget Support	GUI Platforms	CASE Tool Integration	HP Support	Price Single Use License (UNIX)
Alslys TeleUSE	C, Motif, UIL	Widget Generation, Custom Motif Style	Motif	ObjectCenter, CodeCenter	HP 9000/400 700 HP Apollo	\$7,500 + Run-time license
HP Interface Architect	C, Motif, UIL	Widget Generation, Custom	Motif	SoftBench	HP 9000/400 700 300 800	\$5,000
ICS Builder Xcessory	C, Motif, UIL	Widget Generation, Custom, (CS Widget Databook)	Motif OPEN LOOK	CodeCenter	HP 9000/700	\$3,200
Neuron Data Open Interface	C, UIL	Custom	Motif OPEN LOOK Mac, Windows Presentation Manager	—	HP 9000/300 400, 700, 800	\$15,000 Run-time license Required
NSL XFaceMaker	K&R or ANSI, C, UIL	Widget Generation Custom (NSL Widget Library)	Motif	—	HP 9000/400 700, 800	\$2,995 \$4,995
Open Inc. Aspect	C	—	Motif OPEN LOOK character	—	HP 9000/300 400, 700, 800	\$3,995
V.I. Corp. X-Designer	ANSI & K&R C, Motif, UIL, C++	Widget Generation DynaGraphX Widgets	Motif	CodeCenter, ObjectCenter, DataViews	HP 9000/800 700, 400, 300	\$3,500
V.I. Corp. DataViews	Interfaces with C, Ada, Pascal, Fortran source programs	Widget Generation, Custom, DynaGraphX	Motif, OPEN LOOK	—	HP 9000	\$7,000
Visix Software Galaxy	C, C++	Widget Generation Custom, The User Interface Class Library	Motif OPEN LOOK MS-Windows Presentation Manager	CodeCenter, ObjectCenter Lucid's Energize	HP 9000/700	\$9,600
Visual Edge UIM/X	K&R, ANSI, C, Motif UIL	Widget Generation, Custom	Motif	CodeCenter, SCCS, SoftBench	HP 9000/400, 700, 300, 800	\$5,000
XVT Software XVT Toolkit	C, UIL, C++	—	Motif, OPEN LOOK MS-Windows, Windows NT, Presentation Manager, Mac, character	—	HP 9000/300, 400, 700, 800	\$4,400

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A UIMS CAN TEST HOW users interface with the application — and how the interface interacts with the application.

lutions' (ICS) Builder Xcessory, which designs and lays out OSF/Motif applications on the X Window System, and generates standard C or UIL code without requiring runtime modules. It also integrates with CenterLine's CodeCenter C development environment, supports C++ and Ada, features a form editor and predefined callbacks, and supports the creation of enforced corporate-wide style guides. For building complex user interfaces, there's the ICS Widget Databook.

V.I. Corp.'s X-Designer generates portable C and C++ code, and, designs and lays out OSF/Motif applications, imports and generates UIL, and can integrate with CodeCenter or ObjectCenter (an object-oriented C++ environment also from CenterLine). X-Designer also features a layout editor and the ability to build hypertext help into applications and a color pixmap editor. Users can add their own or third-party widgets.

The second category — User Interface Management Systems — includes Visual Edge's UIM/X, Telesoft's TeleUSE and NSL's XFaceMaker. HP's Interface Architect, also falls into this group. Generally, a UIMS includes both the IDT and a dialog mechanism for linking the interface and the application. Use of an UIMS enables the developer to define the interface's "look and feel," or behavior dynamically, and to also test and debug this behavior. For example, a UIMS can test how users interface with the application, how these elements interact with each other, and how the interface interacts with the application.

Visual Edge's UIM/X, which is marketed through a large distribution channel, owns the undisputed market share both in UIMs and general GUI builders. UIM/X supports OSF/Motif, generates ANSI-C or K&R code, reads and writes UIL, and can be used to enforce corporate style guidelines. The product includes several editors and a library of convenience functions. A built-in C interpreter enables developers to test the interface when their application is running. UIM/X also can be tailored for market-specific applications.

HP's Interface Architect is based on Visual Edge's UIM/X, with added enhancements. They include HP SoftBench integration, UIL support, an interface browser and interface editors. The product supports concurrent editing of multiple components and pallets, which can be used to save and reuse components. (See product review, *HP Professional*, January 1993, p. 48).

Alslys, formerly TeleSoft, offers the TeleUSE UIMS, which supports OSF/Motif, includes an IDT and other tools to manage everything from prototyping to maintenance. Well-suited to large development teams, TeleUSE features the Dialog ("D") scripting language that handles communications between the GUI and the application code, eliminating the need to write C code. For easy portability, TeleUSE can import UIL code, features C++ support and can be integrated with third-party tools, including CenterLine's CodeCenter and ObjectCenter, Pure Software's Purify error-detection software, and several widget sets. (See TeleUSE product review, *HP Professional*, November 1992, p.42).

Another UIMS for OSF/Motif is XFaceMaker from Non Standard Logics, a European company that has expanded to the U.S. XFaceMaker features an intuitive design that enables users to prototype interfaces dynamically before creating an application. Included with XFaceMaker is FACE, a C-like scripting language that developers can use to write callback scripts in order to test the interface's behavior during construction. With XFaceMaker, users can import UIL code, generate ANSI C or UIL code, use dialog boxes for editing menus, and incorporate object-oriented templates for enforcing a style guide. Also available is the Widget Factory for creating custom widgets. (See Product Watch, *HP Professional*, January 1993, p. 14).

Multiplatform Mania

WHILE THE GUI WARS may have settled down, the reality is that it's not unusual to have several different platforms in a single shop. Cross-platform development systems help simplify the porting of applications from one platform to another. Such products include Neuron Data's Open Interface, XVT Portability Toolkit from XVT Software, Visix' Galaxy and Open Inc.'s Aspect.

Neuron Data's Open Interface is an object-oriented application development toolkit for building graphical user interfaces that can be ported across industry-standard platforms, including OSF/Motif, Open Look, MS-Windows, Presentation Manager and the Macintosh. Open Interface consists of an Open Editor, a WYSIWYG interface builder used to draw the application interface, and a set of libraries for managing the user interface. An extensive widget set supports every GUI function on every platform, with the appropriate look and feel.

Aspect from Open Inc. uses portable user interfaces, so it's not necessary to recode for every windowing system. Developers can add custom control definitions for special applications. Aspect's Interactive Resource Builder saves descriptions of user interface objects in portable resource files, enabling developers to change the look of the user interface without affecting program logic.

XVT Software's XVT Portability Toolkit enables developers to build and maintain C or C++ applications that are portable

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to OSF/Motif, Open Look, MS-Windows, Macintosh, and Presentation Manager GUI platforms. Additionally, the XVT Portability Toolkit supports character-based interfaces for DOS and many UNIX environments, including HP-UX 8.0 on the HP 9000. Also available is XVT-Design, an interactive design tool and application generator that enables software developers to create GUI resources, such as windows and dialog boxes, and design the layout graphically.

Last but not least is the Galaxy Application Development Environment from Visix, developer of the Looking Glass desktop managers. Galaxy is a complete development and runtime environment, which also features a networking layer for con-

nectivity to a server. It features a uniform multiplatform Application Programming Interface (API), portable architecture, look-and-feel independence, and supports numerous communications protocols including TCP/IP.

Building To Specs

IN ADDITION TO UIMS PRODUCTS and multiplatform interface development tools, yet another type of product has entered the growing GUI development market: Dynamic Data Visualization Tools (DDVTs). DDVTs not only provide an environment in which to develop GUIs but also allow changes during runtime according to system and network variable data. V.I.'s DataViews, which falls into this category, enables application developers to build an interface to depict, analyze and regulate real-time scientific or industrial processes. DataViews includes an interactive drawing editor for creating customized user interfaces and a comprehensive subroutine library for managing and manipulating displays.

Despite the large number of multipurpose products already in the GUI builder market, the number of specialized GUI tools continues to grow. To build Windows front-ends, there's Frontender! for Windows from Austin-based startup Zebra Software Development Co. Frontender! takes advantage of WRQ's Reflection for Windows (and other emulation software) to build GUIs for applications running on the HP 3000 or DEC VAX. Vermont Creative Software's Vermont Views offers a character-based interface tool that supports DOS and UNIX platforms, including the HP 9000 series under HP-UX. Meanwhile, database developers can take advantage of the several 4GL GUI development tools, such as JYACC's JAM, Oracle Tools, and ASK/Ingres' Window products.

Mike Foody, president of Visual Edge Software, developer of UIM/X, says that corporations, ISVs, and system integrators all have different needs, whether that means building applications for internal use, doing new development for resale or tailoring applications for downsizing situations. Vertical applications, including CAD and database development, have other requirements. Foody emphasizes that demand for GUI-based development tools has expanded significantly beyond the early adopters, who were generally sophisticated C++ programmers. "In the future, there will be more tools that are visually oriented, supporting multiple platforms, and with a movement toward C++," he predicts.

GUI builders can help reduce prototyping and development time, save money, and greatly simplify maintenance. While some OSF/Motif and C expertise is generally required, the programmer's prerequisites vary according to product. The trick is to choose the product most suitable to your development environment and the expertise of your in-house staff.

COMPANIES MENTIONED IN THIS ARTICLE

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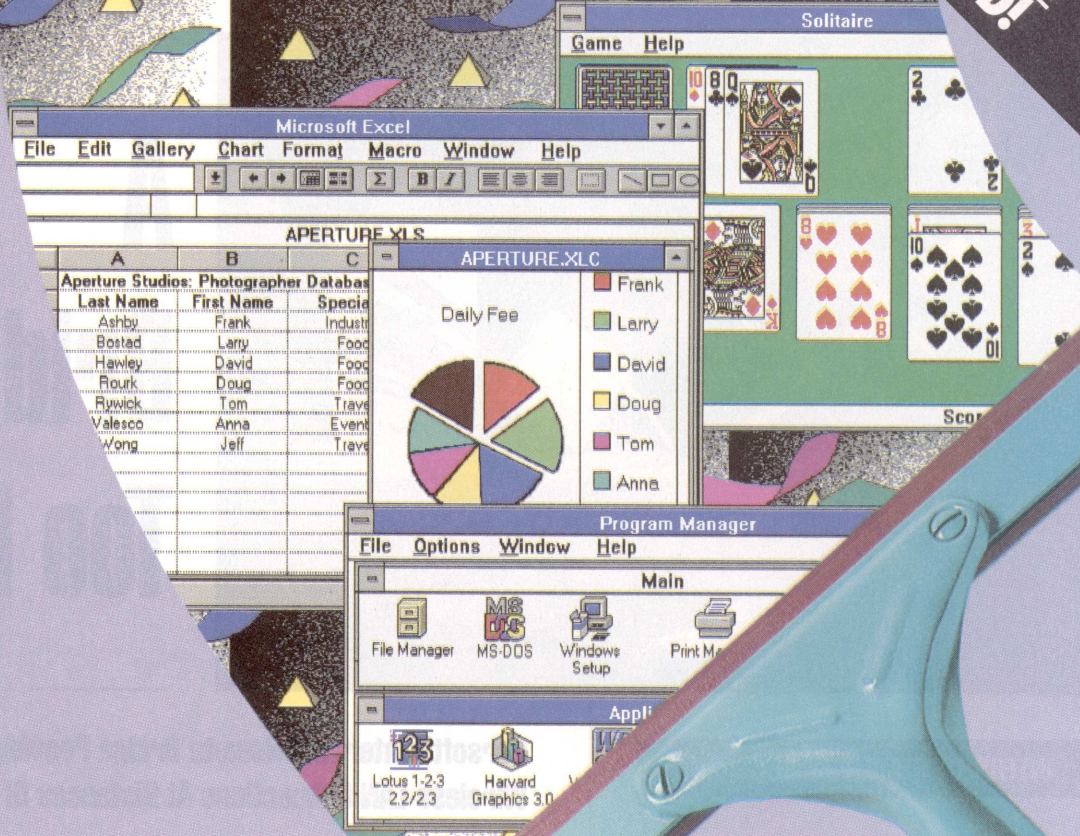
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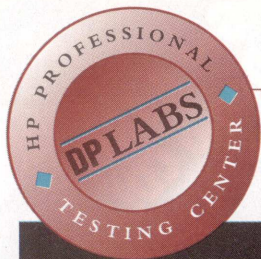
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CIRCLE 458 ON READER CARD



A Bridge Too Far?

INTERSECT REMOTE BRIDGE

OBSERVATIONS:

- Portable LAN connectivity.
- Easy to install.
- Protocol- and operating system-independent.
- Truly plug-and-play solution.
- Supports Ethernet and Token Ring.

PRICE: \$6,995 each for Intersect Remote Bridge for Ethernet and Intersect Remote Bridge for Token Ring.

PLATFORM: All network operating systems and protocol traffic.

Persoft Inc.

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CIRCLE 306 ON READER CARD

Persoft's Intersect Remote Bridge Provides 2 Mbps Wireless LAN Connections At Distances Of Up To Three Miles

If you've never connected two LANs separated from each other by a large geographic distance, you might think it's an expensive proposition. Leased T1 lines can be costly to install, and monthly charges are significant. Fortunately, Persoft's wireless Intersect Remote Bridge, which connects two physically separate LAN segments with the use of broad-spectrum radio, can do the same job for less money.

The Intersect Remote Bridge supports two major network hardware interfaces, Ethernet and Token Ring. The Ethernet version supports thick, thin and twisted-pair wiring. Implemented at the MAC layer, the bridge is protocol-independent and supports many common Ethernet protocol types, including Novell, Banyan and HP Probe. It also offers filtering capabilities that reduce unnecessary network traffic and enhance security by controlling access to segments that carry sensitive data. It can be configured to control access to the bridge by Ethernet address, protocol or, if applicable, IP address.

Based on a 386SX PC with 640 KB of base memory and 256 KB of extended memory, the bridge unit sports a serial port; two parallel ports, which go unused, a female F connector for the radio antenna, a 2,400-baud modem, a monochrome CRT port, and connectors to join the built-in network interface to three types of Ethernet media. It also comes

Marty Levine

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- Repack detail datasets to improve their performance
- Reblock datasets (optionally modifying global database buffer size)
- Relocate datasets to specific disc devices or classes
- Modify security provisions
- Erase datasets (delete all the entries in specific datasets)
- Recreate missing dataset files
- Rename fields, items, datasets
- Change primary path definition

Reporting

- Capacities of all datasets
- Characteristics of data items
- Characteristics of datasets
- Paths
- Schema

Database-level Functions

- Copy databases
- Cremate databases (first erase and then purge all datasets)
- Rename databases

Restructuring

- Add:
 - Data items to databases
 - Fields to datasets
 - Datasets to databases
 - Paths between masters and details
 - The sort feature to paths
- Delete:
 - Data items from databases
 - Fields from datasets
 - Datasets from databases
 - Paths between masters and details
 - The sort feature from paths
- Change:
 - The characteristics of data items (and their fields) in all datasets
 - The characteristics of fields in a specific dataset
 - The type of datasets (i.e. automatic, manual, detail)
- Shuffle:
 - The order of datasets
 - The order of fields within dataset entries

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with a 1.44-MB floppy drive for running the bridge software, but does not have — nor need — a hard drive. You'll need at least two of these units to connect two remote LANs.

Each bridge unit comes with two radio antennas: an omnidirectional antenna designed for indoor use at distances of up

to 800 feet and a directional antenna supplied for outdoor use at distances up to three miles. Persoft also supplies a 33-foot antenna lead-in cable with each bridge unit.

Software for the bridge consists of two master diskettes and a copy of SmarTerm 320, a software product that allows a DOS

PC to be used as a VT-series terminal. Persoft also supplies one null-modem cable that can be used to connect a terminal or a PC running SmarTerm to the bridge's serial console ports.

The Omnidirectional Option

The Intersect remote bridge is easy to set up and use. We unpacked both units and set them up approximately 150 feet apart. We started our evaluation using the omnidirectional antenna.

First, we tacked up the antennas for temporary mounting and testing. Each antenna screwed into the F connector on the back of a PC. We used a PC running SmarTerm as a console on our first bridge unit. We connected it to the bridge by hooking the null-modem cable supplied to the serial ports of the two systems. Then we connected a monochrome monitor and a standard PC keyboard to the other bridge unit.

At sites that have PC hardware, a PC can be turned into a terminal using the SmarTerm software supplied with the Persoft bridge. Once the bridge is configured, these console devices can be disconnected.

Next, we hooked one bridge into one of our thin Ethernet LANs and connected the other to a segment of thin Ethernet that ran between the bridge and a PC running version 2.05 of FTP Software's PC/TCP. Booting from copies of the remote bridge master diskettes, we brought each bridge up and, from the startup menu, selected the RangeFinder option. At the next screen, we entered a name for the bridge unit and accepted the default of 0 x 300 as the base I/O address for the unit's wireless adapter card.

Once you have both bridges configured, both consoles display the main screen of the RangeFinder. For each bridge, you see statistics on transmitted packets, received packets and the percentage of transmissions received successfully. You also see information on relative signal quality, the signal-to-noise ratio and the strength of the signal. Each bridge sends a steady stream of 72 packets per second, containing performance

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data of the transmitting bridge. The RangeFinder module just looks at packets; it does not request retransmission of corrupted packets.

What RangeFinder does do, however, is help you position the antennas for maximum performance. The Intersect manual provides a list of detailed steps to follow for proper aiming of the antennas. In our case, at 150 feet and with a line of sight between antennas, we had a 100 percent successful receive rate at both ends of the bridge. Signal statistics indicated that we had an excellent connection.

Go Configure

Leaving RangeFinder, we returned to the Intersect main menu and configured each bridge. Selecting the configuration option, we gave each a unique network ID and configured our bridge network interfaces for thin Ethernet.

The access control options within the configuration subsystem let network administrators regulate node access to the

bridge. You can control traffic by Ethernet hardware address. You also can control bridge access by network protocol. For example, you could restrict Novell packets to one side of the bridge while allowing TCP/IP packets and DECnet packets to pass through. The bridge also gives you another layer of control over IP packets by allowing you to specify bridge access by IP address.

Access control works in one of two modes. You can configure the bridge to filter certain nodes or protocols and restrict them to a segment, or you can specify which nodes or protocols are allowed to forward or send traffic across the bridge. Within any of the methods of specifying packets, you can filter or forward, but not both.

You can, however, mix filtering and forwarding across packet specification schemes. You could filter certain protocols and forward traffic from specific IP addresses. Each side of the bridge can filter or forward packets from up to 5,000 Ethernet hardware addresses and up to

512 IP addresses. You also can filter or forward up to 32 different packet types.

Another configuration option, spanning tree parameters, allows you to place redundant sets of bridges between two LAN segments without creating network loops. By adjusting parameters such as the priority of bridges, wired and wireless ports, and the costs of wired and wireless paths, you can create a fault-tolerant, wide-area network in which a failed bridge will always be replaced by the best available unit.


The configuration menu lets you save configuration parameters in a file or preserve them in a hard-copy printout. Persoft suggests doing both.

Remote Possibilities

After we had aimed our antennas and configured the bridge units, we went back to the main menu and selected remote bridge operation. The remote bridge program screen listed information about the status of both sides of the bridge.

Running FTP's PC/TCP, we used the ftp utility from one DOS-based PC to attach to another DOS-based PC running as an ftp server. With both PCs on the same Ethernet segment, we were able to transfer a 1.5-MB file in 32 seconds. When we performed the same transfer across our Intersect bridge, it required 53 seconds. Not bad for a 2 Mbps remote connection! Later, we tried the same test using the directional antennas between two buildings. With the antennas approximately 300 feet apart, we transferred the 1.5-MB file in 54 seconds.

The obvious reason for selecting a wireless network bridge is convenience. But there are other less obvious and perhaps more compelling reasons. For instance, suppose a small fire in your telephone switch room makes your leased lines unusable. If the other side of your line is less than three miles away, you could use this Persoft product to re-establish the connection quickly and without a lot of hassle. Products such as the Intersect Remote Bridge are great for environments and applications that require this kind of flexibility. ■



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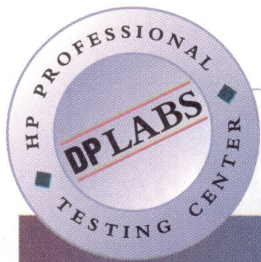
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More Than A Pretty Face

VISIMAGE

OBSERVATIONS:

- Client-server model, end-user data reporting/extraction utility.
- Multiplatform, multidatabase.
- Local prototyping for list and report creation.
- Power for the sophisticated user.
- Ease of use for the novice.

PRICE

The ASKPLUS server is CPU-based and ranges from \$2,500 to \$25,000. Pricing for VISIMAGE PC is \$500 per copy (a network version — five users — is available for \$1,875).

PLATFORM:

VISIMAGE PC client: IBM AT or compatible with 640 KB, a hard drive with at least 3 MB free, and MS-DOS 3.1 or higher.

ASKPLUS server: HP 3000 (MPE V and MPE/iX native mode), HP 9000 series 800 and 700 (HP-UX).

File structures supported include: flat files, indexed sequential (KSAM or CISAM), TurboIMAGE, ALLBASE, ORACLE, INFORMIX, and INTERBASE (STARBASE).

VITAL Soft

1153 Bordeaux Dr.
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Sunnyvale, CA 94089-1210
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CIRCLE 303 ON READER CARD

VITAL Soft's VISIMAGE Transforms A User-Friendly PC Interface And Host-Based Report Writer Into A Client-Server Data Access Tool

VISIMAGE PC developed by the French firm Cogelog (now ARES), seeks to merge the user-friendliness of a PC interface with the powerful capabilities of a host report writer, ASKPLUS, to create a client-server tool suitable for all levels of users.

VISIMAGE and ASKPLUS are distributed and supported in North America by VITAL Soft, a wholly owned subsidiary of ARES.

With VISIMAGE, it's easy to access data from a host computer. With a few keystrokes (or mouse clicks for you mouseketeers), you can locate what you want in a database, and produce everything from simple lists to sophisticated reports. The lists/reports can be directed to different types of output devices and can even be downloaded directly to the PC in a format compatible with popular PC programs.

A PC Client That Works

VISIMAGE PC has two components. One part of the program (ASKPLUS) works with the host computer and the other part (VISIMAGE) works with your PC. The PC part is used to create query requests and to design lists and reports. The host computer part (or server) is then activated by the PC to carry out the request. The result is sent back to the PC for display. The PC-host communication pipeline is handled seamlessly by Walker, Richer & Quinn Inc.'s PPL.

John P. Burke

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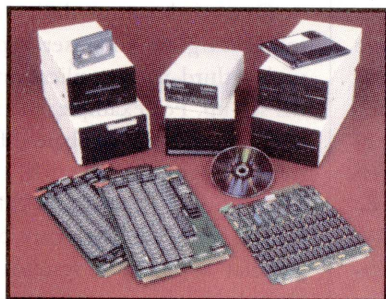
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VISIMAGE PC is *much* more than just a fancy front end for a command-driven report writer. It maintains a local dictionary, (a set of PC files stored on the PC), which describes the contents of the host databases and files. The local dictionary is built from either a host dictionary, or directly from the database root files.

With this local dictionary in place, everything involved in the preparation of the selection and report request is completed on the PC without placing any load on the host. Only when the selection or report is actually called for is the server on the host activated.

To test the program's intuitiveness, I worked extensively with VISIMAGE PC before opening the manual. VISIMAGE PC has a very natural feel and is very easy to use. When I finally did crack the manual, I worked through the first six chapters, using the supplied test database and then was ready to give the access tools a try on one of my favorite TurboIMAGE databases.

When working from an existing database, you have many options, including HP Dictionary, a special ASKPLUS dictionary, or an interface to the Powerhouse dictionary. However, if you know the database well enough and are just doing casual inquiries like I was, a simple two-line EDITOR format file will be all the set-up you need. (VISIMAGE will read the database root file.)

There are many ways to move about in VISIMAGE PC. For rodent fans, there is reasonably full mouse support. I say "reasonably full" because there are some control functions that still require the use of the keyboard (e.g., scrolling the on-screen LIST and REPORT displays appears to be impossible using the mouse alone). Also, like most character-based "windowed" systems, the mouse pointer is a clunky box that moves around more or less in synch with the mouse movements.

In fairness, however, I should also point out that because VISIMAGE is character-based, it performs quite acceptably on an old 286 Vectra with DOS 3.3. (A full graphics-based MS-Windows 3.1 version of VISIMAGE is expected in late '93 or early '94.)

VISIMAGE PC has a complete complement of accelerator keys. At any time, depressing SHIFT+F1 will display all the accelerator keys along with a brief description of their use. And then there are the good old ALT+'letter' pull-down menus. As I said, a plethora of choices.

Tight Third-Party Integration

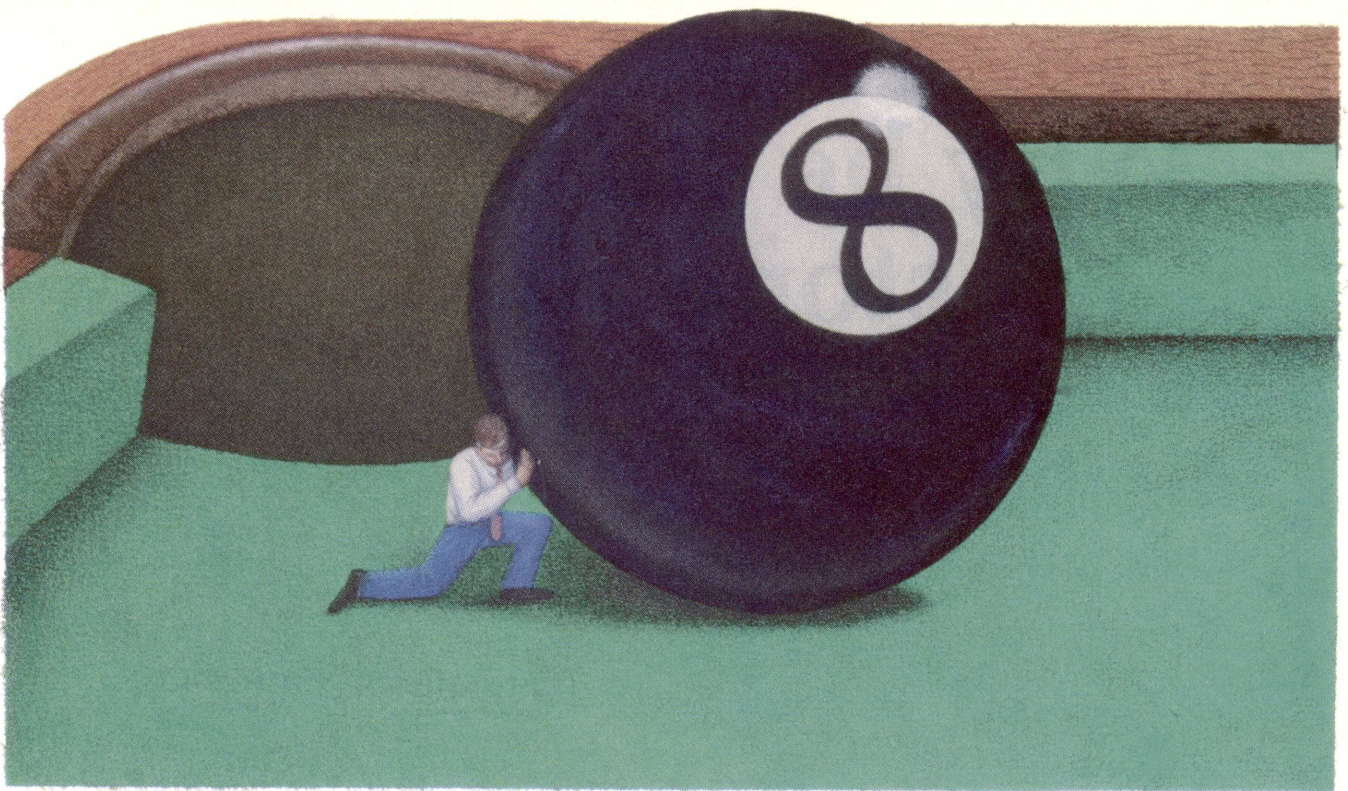
VISIMAGE is particularly adept at handling "missing" data — for example, the situation where there is no entry in a secondary file corresponding to an entry in the primary file.

VISIMAGE PC also has interfaces for either SUPERDEX (Bradmark Technologies Inc.) or OMNIDEX (Dynamic Information Systems Corp., DISC). And the Accessory Menu can be customized to directly call external programs, like Lotus 1-2-3 or Microsoft Excel, without leaving VISIMAGE or terminating the server connection.

Procedures created in VISIMAGE PC can be saved and reused. In fact, they are usable directly by ASKPLUS. Also, you may save a description of a procedure along with the procedure itself so that when it is opened, the description is loaded into VISIMAGE's notepad. VISIMAGE PC has a set of functions (called special operators in VISIMAGE terminology) for manipulating items plus hooks for user supplied functions and a macro capability.

One of the most difficult factors in integrating an end-user report-writer with a third-party application is the initial set-up. For example, the field names in the application databases often are difficult to reconcile with a meaning. VITAL Soft has created VISIMAGE dictionary templates for many of the more popular application systems and make these available to customers of VISIMAGE PC.

VISIMAGE PC successfully merges the power, speed and inherent intuitiveness of the PC user interface with the proven industrial-strength report writer ASKPLUS to create a tool powerful enough for the most sophisticated data analyst yet accessible to even the most casual user. ■



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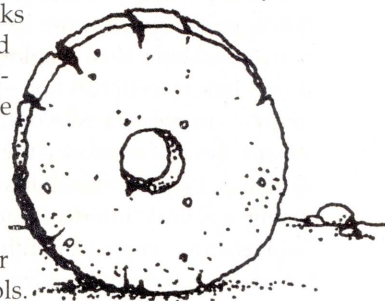
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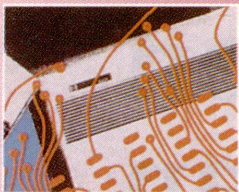
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NETWORKING

Tim Cahoon

high-speed networking standard called 100Base.VG. This new standard, which was presented at the December IEEE 802.3 meeting, was the result of work done by AT&T Microelectronics, HP Labs Bristol, HP Roseville Networks Division and AT&T Bell Labs. Its primary goal is to increase Ethernet bandwidth by making network transmission more efficient.

A few years ago, when we talked about Ethernet, we referred to a big cable that stretched from one end of a building to the other. Workstations contained network interface cards that used Carrier Sense Multiple Access/Collision Detect (CSMA/CD) to send Ethernet packets across the wire in an orderly fashion. These workstation interface cards provided the only intelligence in the network.

Today when you install an Ethernet LAN, you're much more likely to use a wiring scheme that employs a closet-based hub or concentrator — pick your term — to create a network. This intelligent device emulates the venerable Ethernet cable. You still have the intelligent network interface cards in your workstation, sending the Ethernet packets as if you were still on that single cable. In this configuration, all your workstations are connected in a star fashion to this hub. Because the hub is acting as an Ethernet cable, every packet transmitted into the hub is broadcast down each of the spokes, even if that spoke is not the packet's final destination.

In working to increase the speed of Ethernet, HP also began with the para-

HP and AT&T Microelectronics recently announced a new

digm of the single cable in mind. One potential option was to speed up the clock on the network adapter cards, but this created several problems. Not the least of these was that this methodology caused the radio frequency interface (RFI) emissions to reach levels outside FCC regulations. It also reduced the maximum cabling distance for Ethernet and required the use of Category 5, or Level 5, wiring. Because most office buildings built since 1980 already have the Category 3 wiring installed, everyone who wanted 100-Mbps Ethernet would have had to pull new cable — an expensive proposition. And this would be on

top of the cost of new network cards and hub updates that would be needed.

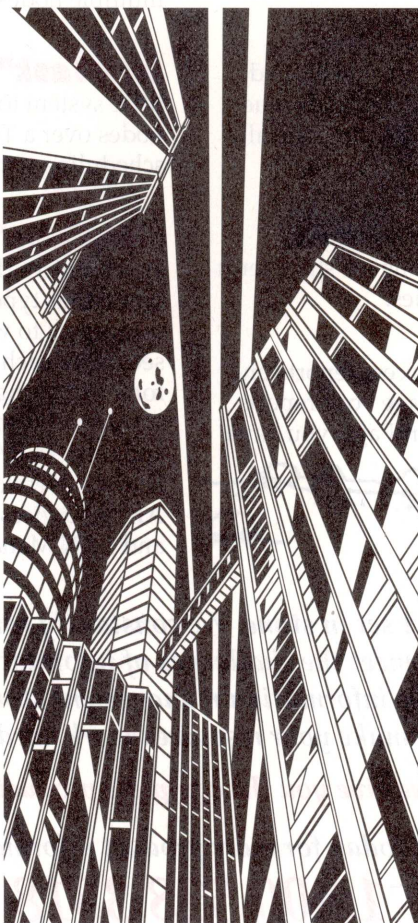
Hub-Centered Networking

Faced with these problems, HP made a paradigm shift. Building on the current 10Base-T technology, the company changed the Ethernet Media Access Control (MAC) layer. In place of CSMA/CD, HP created Hub-Centric Demand Priority Protocol, which uses Quartet Signaling for transmission. This new protocol became the basis for the new 100Base.VG standard.

Because only the MAC layer is changed with the Hub-Centric Demand Priority Protocol, the format of the actual Ethernet packet remains the same. This provides two benefits. The first is transparent access to applications using Ethernet for communications. None of your applications will know or care if it is running on 10-Mbps or 100-Mbps Ethernets. The second is that 100Base.VG can be simply bridged to slower Ethernets. Because only the Ethernet packet is moved across the bridge, differences in MAC formats don't matter.

Hub-Centric Demand Priority Protocol put all the intelligence of the network into the hub rather than at each workstation. Workstations now have a cheap, dumb network interface card. Packet transmissions are received at the hub and routed on the fly to their destination. Packets are sent only to the destination and are not broadcast to all hosts as on traditional Ethernet. This provides greater security and cuts down on wasted bandwidth. Multimedia and real-time applications now can be given transmission priority over other traffic. No longer will a video conference compete with file transfers for bandwidth.

Quartet Signaling is the new transmis-



sion level for 100Base.VG. Unlike 10Base-T, which uses only two twisted-pair wiring, Quartet Signaling uses four twisted-pair. Because the technology was adapted from the 10Base-T standard, it will be possible to create a single board that can automatically sense the correct signaling system when the cable is connected. This means a workstation could have a single RJ-45 jack into which you could plug either 10Base-T or 100Base.VG, and both would work. Another benefit of Quartet Signaling is that it maintains longer cabling distances and keeps the RFI levels below the FCC regulation limits. In addition, you can use the more prevalent Category 3 cable with 100Base.VG. If you run 10Base-T today, you can run 100Base.VG when it becomes available.

As a network administrator, I like HP's new 100Base.VG proposal. It provides me with higher speeds without the high cost of pulling new cable. Because I'll have to buy new network interface

HP'S NEW 100BASE.VG proposal provides you with higher speeds without the high cost of pulling new cable.

cards and hub equipment with whatever networking update I choose, the savings from using existing cabling become very important. With only the MAC level changing, vendors should be able to update their bridges and hub equipment

fairly quickly and easily. All of this allows me to introduce this high-speed technology and support it transparently to the users. I can mix and match using bridges any way I want.

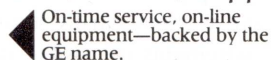
Initial projections on equipment costs are sketchy at best, but there are some estimates. Equipment first delivered may be about twice as expensive as current 10Base-T products. After 18 to 24 months, the price should drop to around one and one half times the cost of the current 10Base-T products. Prices could drop even faster if vendors can bring products to market quickly.

The 100Base.VG proposal workgroup was to meet in January 1993. The new standard will be on the agenda again for this month's IEEE 803 meeting. If all goes well, you can expect to see products later in 1993.

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OBJECTIVELY SPEAKING

Richard Riehle

State Inspection

A physical entity, such as the dial on a television set, could

be said to have states that can be numbered two through 73. The operations to change the state of the dial would be "rotate_clockwise" or "rotate_counter_clockwise." Each increment in the rotation behavior changes the state of the dial. It would be easy to design a software "class," DIAL, that could represent the real-world dial on the television set.

Changes in state often are represented with "State Transition Diagrams" (STD). Each state transition can be accomplished using a "modifier." A modifier is the behavior that causes a change in the state of a software object.

A Class Example

Suppose an application requires a LIST that must be processed as an array. The LIST can have state and behavior that changes its state. In object-oriented design, the developer should not have to design something new; a LIST should be created from a reusable component. For example, using the Microsoft Foundation Class (MFC) for C++, the designer has an array class, COBArray. This class includes modifiers for allocating an array, inserting and deleting from an array and doing garbage collection. It would be senseless to rewrite this class from scratch.

The application LIST may be designed through "inheritance" from the existing array class. A LIST class is designed by extending the facilities of the array class.

To the application developer using the newly designed LIST class, it doesn't make a difference how the class is developed. In fact, it is often irrelevant how the data is organized or processed. That is, once the class, LIST, is modeled as a

software object, any other software that uses the class should have no visibility to how it is implemented. The structural details of the LIST should be "hidden."

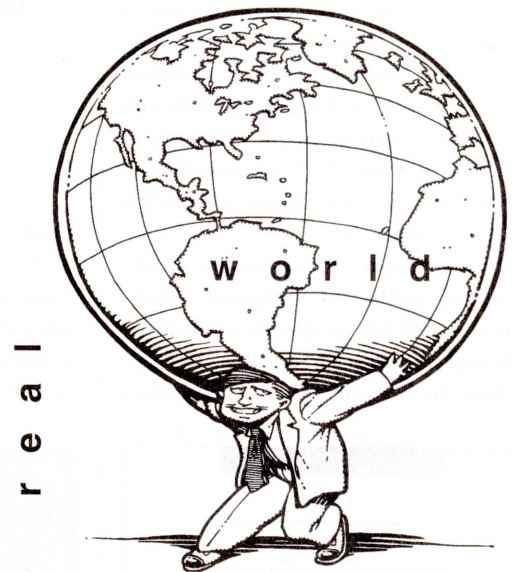
Important to the LIST object user is *what kind* of operations are available as state modifiers. What is the externally visible behavior available to change the state of the LIST?

For example, an Add operation increases the number of elements in the LIST; Delete reduces them. These operations represent *what* modifiers are available, yet don't provide information about *how* the modifiers do their work. Object-oriented methods always are more concerned with *what* than *how*.

In a complete implementation of the LIST object, many other modifier operations will be necessary to effect state transitions. Moreover, the requirement for such operations will exist independently of the programming language used for coding the LIST. Maybe there will be a need for operations to "insert," "copy," "move," and "sort" or even a "reorganize" operation. Any one of these will be a state modifier.

State's Witness

A modifier effects a state transition on a software object. A selector returns information about the state of that object. Although this seems obvious, the design of the software object is not complete until it has the required selectors, as well as the state modifiers.



A selector returns information such as Is_Full, Is_Empty and Size_Is. A selector does the work normally associated with "if" statements on visible data in more traditional designs. Because an object is usually implemented as a "private" part of a class, it is impossible to directly inspect the state with an "if" statement. In C++ and Ada, for example, your application code will not have direct visibility to the structure of a private part of an object.

This restricted visibility is designed into objective languages to support the software engineering principle of "information hiding," a principle that supports the goal of software reliability.

In our example class, LIST, you must consider the limits as well as the benefits in designing a class or package around private parts. The limits and benefits are often the same: No other program

entity can access the details of the LIST without using one of the defined functions.

A class design should include the selectors necessary to return information about all relevant states for the object. Without selectors, a design is not complete. This becomes true once you really understand that "if," "switch" or "case" statements can't access the underlying structure of the LIST.

The question you must ask in this design is, "What selectors are important to represent a complete class definition?" For our example, LIST, it is simple to identify the selectors to determine whether the LIST is empty, full, or how many items are in the LIST. There are other states that may not be quite as obvious.

Across The Threshold

It's easy to overlook the potential value of selectors that return information about

A CLASS DESIGN

should include the selectors

necessary to return

information about all relevant

states for the object.

states that are about to change. These are sometimes regarded as "threshold" states. For example, suppose your LIST size is to the point where inserting one more element will make it full. This is called a threshold. If removing one more item from the LIST will make it empty, that

is also a threshold state. Threshold information is useful when you want to launch some other action before an empty or full condition occurs.

In this case, the design is not complete until the threshold conditions are represented by selectors.

A clever designer may decide to design some general-purpose selectors as virtual functions, C++ templates, or generic formal subprogram parameters to cover those situations where a set of conditions has not been covered. A programmer might even decide to use the C++ "friend" capability to compromise "information hiding." None of these options relieves the designer from the responsibility to include the appropriate selectors in the final design of the software class.

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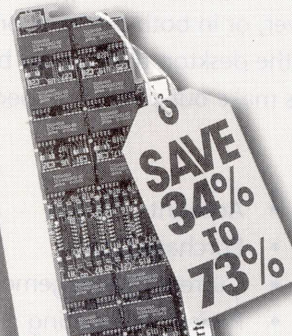
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MANAGING YOUR HP 3000

John P. Burke

To me, “arguing” opposing sides of an issue is an intellectual exercise; to my wife, it represents a lack of passion and commitment. Lately, Hewlett-Packard has been trying to enlist customers’ passion and commitment in favor of several major initiatives. For the sake of debate, let’s ask the question: Is our passion and commitment warranted?

Take HP’s ongoing commitment to MPE V, for example. Although it’s of tremendous value to customers, MPE V support is also the ultimate cash cow for Hewlett-Packard. But HP was slow to realize this until big money customers started threatening to discontinue paying for support. They argued that MPE V was not being enhanced, so why pay large support fees. HP realized this was a movement that could easily generate steam if something weren’t done to stop it. So, it threw a few million dollars (out of the many tens of millions of yearly support dollars) into a new group, the Software Technology Division (SWT), and in effect said “do what you have to but keep these people paying support.”

The result has been more changes to MPE in the last two years than in any other comparable time period in MPE’s history. This frenzy of activity has culminated in Release 30, unfortunately a “pull” release, which is truly surprising in its scope. A few of the many enhancements include:

- Support for wildcard characters in the PURGE command.
- LISTF with options 3, 4, 6 and -3.
- Programmatic RUN through the COMMAND intrinsic.

Who’s Supporting Whom?

ARE THESE ENHANCEMENTS REALLY WORTH WHAT WE CONTINUE TO PAY IN SUPPORT?

- CHGROUP command to change logon group without logging off and on.
- Support for Critical Item Update in TurboIMAGE/V.
- Support for the addition or subtraction of capabilities in the ALTACCT, ALTGROUP and ALTUSER commands.
- Support for wildcard characters in manipulating ACDs with the ALTSEC command.
- Removal of escape sequence edits for SM/OP users of TELL, TELLOP and WARN commands and PRINTOP and PRINTOPREPLY intrinsics.
- A 60-day trial version of GLANCE-PLUS/V.

High Cost Of Living

This is great news, right? Even I can’t find fault? Sure, I can. True, I’ll use the new features. And, for a while, I was caught up in the enthusiasm and silenced my grumbling about software support fees. But consider for a moment that we’ve managed to survive nicely all these years without these features. Or, we’ve obtained third-party software or CSL routines that provide the same or similar functions.

Are these enhancements really worth what we continue to pay in support? No.

The current end-of-support dates for hardware for all Classic systems, except several models of the Micro 3000, are three years from now. The dates may be extended, but are you willing to bet your business on it? Even if the dates are extended, the hardware support fees will continue to rise making reliance on Classic systems less and less cost-efficient. Face it (I have to), despite the enhancements in Release 30, MPE V is on a fast track to oblivion.

The better course for Classic system owners (though less profitable for HP) might have been a freeze on MPE V and related software product enhancements, and a greatly reduced support fee geared exclusively to bug fixes/resolutions and tele-support.

A Win-Win Situation?

Like MPE V Release 30, IMAGE/SQL is a technical knockout — everything it’s cracked up to be and more. We have the READ version of IMAGE/SQL on HP Professional’s DP Lab’s 917LX running under MPE/iX 4.0. It’s easy and straightforward to ATTACH a TurboIMAGE database with the utility ATCUTIL to a DBEnvironment. The TurboIMAGE database appears as though it were a group of tables in an ALLBASE/SQL database. Within minutes, I was able to access a TurboIMAGE database via SQL’s SELECT from the ALLBASE/SQL utility ISQL.

Clearly, the SQL interface is a boon to current HP 3000 users and will add years of life to legacy systems based on TurboIMAGE. Also, I applaud the decision to treat IMAGE/SQL as an enhancement (everyone on support gets IMAGE/SQL) as opposed to a separate product. I won’t even complain about the increased support fees.

Sounds like passion and commitment for HP's course of action, right? Not entirely. It seems IMAGE/SQL has fanned the flames of the ongoing IMAGE vs. ALLBASE and IMAGE vs. anything-else debates. We've been treated to several technical arguments about why IMAGE is better now and could be better still if certain enhancements were implemented. What the arguments fail to address, however, is that these technical considerations are relatively unimportant in the prospective customer's decision-making process.

I'm as passionate about IMAGE as anyone. I've worked with it for more than 15 years and have a tremendous personal investment in it. But the fact remains that for new development and especially for new HP 3000 customers, economics and politics strongly favor buying ALLBASE/SQL. The advent of IMAGE/SQL simply makes it easier for existing TurboIMAGE users to migrate their applications to ALLBASE/SQL.


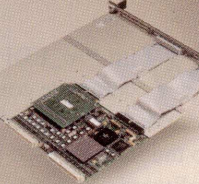
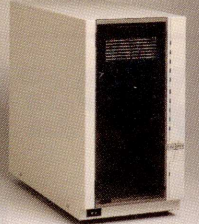





I agree, as some argue, that with standards-based SQL the underlying database engine is irrelevant. But from a purely practical standpoint, the ALLBASE engine exists on both the HP 9000 and HP 3000, while TurboIMAGE exists only on the HP 3000. (We've been told to forget about TurboIMAGE on HP-UX.) Being on both platforms gives ALLBASE an advantage over TurboIMAGE simply because its development and support costs can be spread across a larger user base. Considering that performance of the two databases is roughly equivalent, there's really no incentive for anyone to start development for TurboIMAGE, especially given the current price differential.

The recent introduction of IMAGE/SQL and the talk of enhancing TurboIMAGE with dynamic detail dataset expansion demonstrate that IMAGE *could* have been the basis for the database engine for ALLBASE/SQL. But it isn't, and no amount of arguing can change that.

The only way IMAGE/SQL will survive long-term on anything other than legacy systems will be if it becomes price competitive with ALLBASE/SQL for new development, including the cost of the third-party tools and utilities required in

an IMAGE production environment. That's an HP marketing and management decision, not a technical decision. I see no indication that HP has any plans to make it so — and that ensures the ultimate demise of IMAGE.

IMAGE/SQL is a win-win situation for Hewlett-Packard and its existing customers. But let's not get carried away. The war was lost when IMAGE was unbundled from MPE and priced non-competitively against ALLBASE. Once the

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genie was let out of the bottle, it could never be put back. As much as it may pain me, ALLBASE remains HP's strategic database engine for the future.

The bottom line: IMAGE/SQL and MPE V Release 30 reflect HP business decisions that have both good and bad el-

ements for customers. Reasonable people can disagree over the "rightness" of these decisions, but they won't be reversed.

Would you like to continue to see articles on this topic?
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THE NEW SUPPORT CONTRACT: TOO SIMPLE?

Software support is an ill-defined concept. For as long as there have been regular software support charges, there has been grumbling and confusion about the value received. The concept of hardware support, however, is fairly well understood and accepted.

HP just sent me a new Support Services proposal for my Classic system. It came with a letter and supporting glossy documentation extolling the virtue of "HP's NEW support framework ... System Support."

There are definitely some good ideas here:

- Hardware and software support combined on one contract.
- Less useless detail (every item is still listed).
- Very much less paper wasted (a "green" proposal?).

But (notice how there is always a "but"), the new proposal format does *not* break out hardware and software costs separately. Hmmmm.

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Transporter Converts TAPS Applications For CICS

Nexcomp Consulting announced The Transformer, a new product to transform TAPS applications on your HP 3000 to run native CICS code.

The Transformer allows organizations using TAPS to migrate to newer versions of CICS without redeveloping or reprogramming entire applications. The transformer features a screen converter that generates CICS Basic Mapping Support Code from the TAPS environment, a source code analyzer that looks at COBOL programs finding statements to be converted, and a source code translator that performs the actual conversion from TAPS macros to equivalent CICS Command Level Program statements. Contact Nexcomp Consulting, 601 Dundas St. W., Box 24006, Whitby, Ontario, Canada L1N 8X8; (416) 430-7781.

Circle 400 on reader card

PRO-EDI 3.0 Features SUPERDEX

Pro Software Inc. will incorporate Bradmark Technologies' SUPERDEX in its next release

of PRO-EDI, version 3.0. PRO-EDI lets users construct a seamless integration of EDI with existing application software. It runs on all HP 3000 systems.

SUPERDEX is a utility that expands the IMAGE/TurboIMAGE environment with many powerful SQL capabilities. This fully compatible indexing environment adds unprecedented data retrieval speed and flexibility to IMAGE/TurboIMAGE databases.

Using SUPERDEX gives PRO-EDI both greater throughput and reduced disk space requirements, as well as greater flexibility for future capabilities.

Contact Bradmark Technologies, 4265 San Felipe, Ste. 800, Houston, TX 77027; (713) 621-2808.

Circle 399 on reader card

WRQ Improves Novell Netware Integration

Walker Richer & Quinn announced a new version of the Reflection Network Series that offers better integration with Novell Netware.

Version 2.1 includes support for Novell's ODI (Open Data-Link Interface) protocol.

ODI manages multiple protocol stacks on a network adapter card, allowing them to co-exist. ODI is similar to NDIS (Network Driver Interface Specification) a standard developed by Microsoft and 3Com, in the protocol management work it performs.

With ODI support, Reflection Network Series Products will provide multiple protocol and Novell currency with any network adapter that has an ODI driver. The Reflection Network Series already offers NDIS support. Reflection Network Series consists of five different combinations of protocol stacks that connect PC LANs to UNIX, HP, DEC and IBM host computers for terminal emulation and file transfer.

Contact WRQ, 2815 Eastlake Ave., East, Seattle, WA 98102; (206) 726-7219.

Circle 383 on reader card

Inference Launches ART*Enterprise

Inference Corp. announced ART*Enterprise, an integrated multiplatform tool for building enterprise-wide computing applications. It is targeted at companies that are rightsizing into client-server and distributed computing environments and re-engineering their business processes.

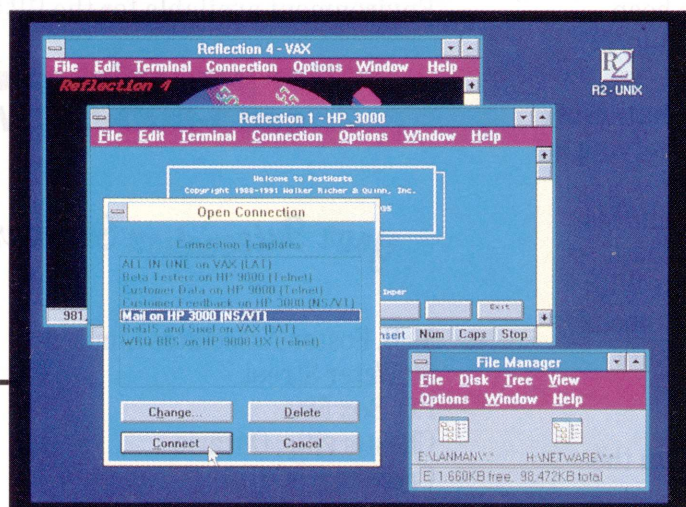
ART*Enterprise features extensive portability, point-and-click GUI development, automatic integration of multiple database management systems, fully object-oriented architecture, event-driven architecture for client-server computing, prototyping and rapid application development, business rule processing and Inference's CASE-Based Retrieval technology for accessing unstructured information, all integrated into an open system design.

It will be available on HP-UX and other UNIX platforms, Windows, Macintosh, OS/2 and MVS.

Contact Inference Corp., 550 N. Continental Blvd., El Segundo, CA 90245-5052; (310) 322-0200.

Circle 398 on reader card

WRQ's Reflection Network Series consists of five combinations of protocol stacks that connect PC LANs to UNIX, HP, DEC and IBM hosts.



ICS Offers OLIT for HP Series 700

Integrated Computer Solutions Inc. (ICS) announced it will provide the SunSoft Open Look Intrinsic Toolkit (OLIT 3.1) for HP Series 700 and DEC Alpha AXP workstations, simplifying the porting of applications between different workstation environments.

The ICS OLIT product will give developers on HP and DEC workstations direct access to libraries of existing Open Look applications running on Sun Microsystems workstations. Organizations will be able to run the same applications and maintain the same look and feel of each application across Sun, DEC and HP platforms. The price for a single user license is \$525.

Contact ICS, 201 Broadway, Cambridge, MA 02139; (617) 621-0060.

Circle 397 on reader card

ADABAS SQL Server Achieves NIST Certification

Software AG announced that its ADABAS SQL Server completed the National Institute of Standards and Technology (NIST) SQL Test Suite (version 3), making it the first commercially available database management system to achieve NIST SQL certification on both IBM's MVS operating system and HP-UX.

This enables customers to operate in a complete open environment and perform transparent application processing across a range of platforms from the mainframe to the desktop.

The SQL validation test suite consists of more than 300 individual tests and ensures SQL compliance with the standard issued by ANSI for level 2 of the ANSI SQL89 standard. ADABAS SQL Server works in conjunction with ADABAS, which recently broke the Transaction Processing Council's TPC-A benchmark record for price/performance on the HP 9000 Series 800 Model 150 uniprocessor system.

Pricing for ADABAS SQL Server on

UNIX ranges from \$400 to \$20,400 depending on the platform and numbers of users.

Contact Software AG, 11190 Sunrise Valley Dr., Reston, VA 22091; (703) 860-5050.

Circle 392 on reader card

Cybernetics' Tape Libraries Add Backup Management

Contemporary Cybernetics announced that its 8mm tape library systems, the CY-CHS10i and the CY-CHS120, are available with backup management software.

Designed for multivendor UNIX networks, the software automates backup and restore operations and gives users direct access to between 25 GB and 3 TB of data, without manual intervention.

The CY-CHS10i features one 8mm tape drive and 10 tapes in a desktop cabinet. The CY-CHS120 features up to four 8mm tape drives and 116 tapes. Both libraries use a robotic tape handler to load and unload tapes without manual intervention.

Contact Contemporary Cybernetics, Rock Landing Corporate Center, 11846 Rock Landing Dr., Newport News, VA 23606; (804) 873-9000.

Circle 396 on reader card

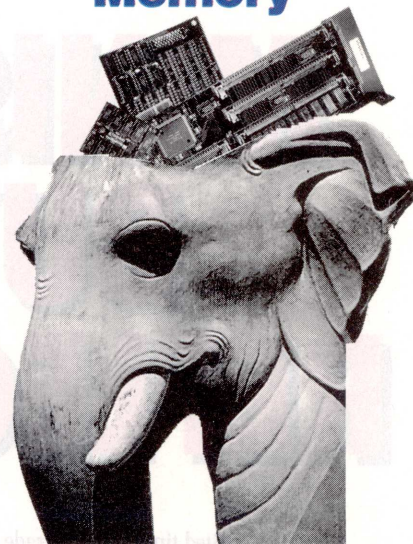
Riviera Announces New User Interface

Riviera Software is now shipping version B.03.10 of its HotKey3000 application switcher. HotKey allows users to switch between programs instantly without logging on and off. To select the program to activate, users use a special hot key that they define.

It is now possible to install users' applications under HotKey without having to stop the system. HotKey does not alter any SL or XL and applications do not have to be modified.

A new windows-oriented interface called NewLook allows users to build the HotKey interface with users' applications quickly and without the need to refer to any documen-

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CIRCLE 282 ON READER CARD**

tation. HotKey accomplishes this with a PC look-alike interface consisting of menu bars, pull-down and pop-up menus and windows. Contact Riviera Software, 7901 Havenwood Dr., Austin, TX 78759; (512) 346-0962.

Circle 393 on reader card

Workstation Source Designs Auto-Shutdown Units

Workstation Source announced the ISA 7000 Series Intelligent Auto-Shutdown Units designed for HP 9000 Series computer systems running HP-UX. The basic unit has

two, microprocessor controlled, A.C. outlets providing A.C. power to the main host unit and supporting peripherals such as disk and tape drives.

The 7000 Series has three models: the basic model 7010, the 7011 with 3.5-inch 1.4-MB floppy, and the 7012 with 3.5-inch 1.2-MB floppy drive. The microfloppy drive section is command and media-compatible with the HP 9122 microfloppy disk drive.

The Auto-Shutdown Unit can activate a power-down sequence upon any one of the following: power fail signal from UPS, command from host, manual switch to front panel.

Contact Workstation Source Limited, 16 Auckland Close, Maidenhead, Berkshire SL6 8QB; 0628 75252.

Circle 385 on reader card

Status3000 Connects HP 3000 Users To LaserJet 4

Extended Systems released the Status3000, a serial interface allowing HP 3000 computers to connect to HP LaserJet 4 and IIISi printers.

HP 3000 computers require interactive communication with printers in order for users to successfully send print jobs. The Status3000 serial interface card enables HP 3000 systems to have an interactive connection with an HP LaserJet 4 or IIISi printer.

The Status3000 has various installation options that can be easily set from the printer's front panel. The Status3000 supports both RS-232 and RS-422 serial, bidirectional communication as well as both hardware and software (Xon/Xoff) handshaking. Various baud rates, ranging from 1200 to 57.6K, also area front-panel selection. Status3000 ESI-2626A is priced at \$495.

Contact Extended Systems, 5777 N. Meeker Ave., Boise, ID 83704; (800) 235-7576; (406) 587-7575.

Circle 391 on reader card

DISC Introduces OMNIDEX For Client-Server

Dynamic Information Systems Corp. (DISC) introduced its instant data access product, OMNIDEX for Client-Server.

OMNIDEX is a sophisticated indexing system that can be installed on most major databases to allow users to instantly select and retrieve data according to any combination of criteria. OMNIDEX for Client-Server adds the ability to access these indexes residing on

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Now for a limited time you can trade in any version of Reflection® and upgrade to MiniSoft 92 for DOS or Windows for just \$59.*

MiniSoft 92 is the **ONLY** HP terminal emulator to include complete LAN connectivity in one integrated package. No additional PC software is required to make Ethernet or Arcnet connections to an HP computer.

MiniSoft 92 comes bundled with its own TCP/IP stack, NS and Telnet virtual terminal protocols, allowing connections to HP host computers across a wide variety of industry standard local area networks including: Novell, Lanmanager, Banyan and Lantastic.

Along with the great savings, MS92 gives you the power and versatility of the fastest growing terminal emulation and data communications package in the HP market. Combining precise HP terminal emulation, reliable file transfer, a powerful command language with serial and LAN connectivity, MS92 represents an outstanding software value.

MINISOFT

MiniSoft Inc.
13617 State Highway 9
Snohomish WA 98290
800/682-0200, FAX 206/668-2435

* Trade in offer requires title page from Reflection® users manual. Upgrades from other HP terminal emulators are available for \$79.00. Offer expires June 30, 1993.

MiniSoft 92 is a registered trademark of MiniSoft Inc. All other trademarks are the property of their respective owners.

CIRCLE 472 ON READER CARD

NEW PRODUCTS

the host machine from any number of PC-clients, including Microsoft Windows and DOS-based programs.

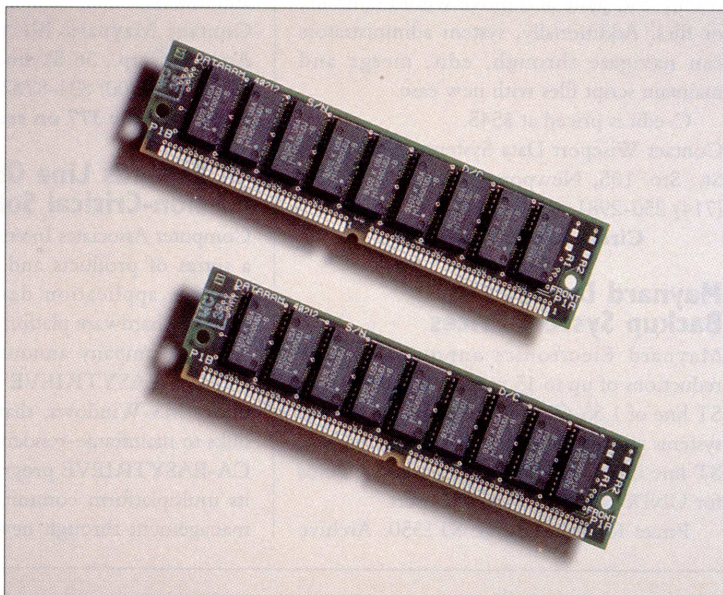
OMNIDEX for Client-Server is available for HP 3000, HP-UX and DEC VAX machines running IMAGE, RMS or Oracle.

Cost ranges from \$9,000 to \$57,500 for the host machine and as little as \$100 per PC in quantity.

Contact DISC, 5733 Central Ave., Boulder, CO 80301; (303) 444-4000.

Circle 390 on reader card

Dataram offers new DR9715 memory boards available in 8-MB and 16-MB capacities.



Dataram Introduces Memory Upgrades

Dataram Corp. introduced memory upgrades for the HP 9000 Model 715/725 RISC-based workstations.

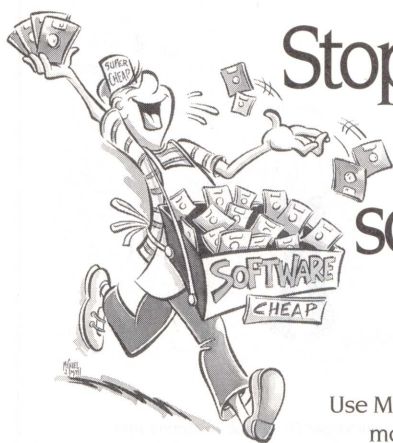
The new DR9715 memory boards, available in 8-MB and 16-MB capacities, offer 20 percent savings over HP's expansion memory. The memory can be installed in any combination of 8-MB and 16-MB boards, allowing users more flexibility as they increase memory.

The new memory is installed as pairs of 4-MB (DR9715/8) and 8-MB (DR9715/16) boards that use 4Mbit, fast-page mode, surface mount DRAMs. The DR9715 is fully hardware- and software-compatible with HP 9000 Model 715/33, 715/50 and 725/50 workstations, and is a direct replacement for HP memory products A2815A (8 MB) and A2816A (16 MB). The DR9715/8 is priced at \$640. The DR9715/16 is priced at \$1,280. A 64 MB version, using 16 Mbit DRAMs, is also available for \$8,960.

Contact Dataram Corp., P.O. Box 7528, Princeton, NJ 08543-7528; (609) 799-0071.

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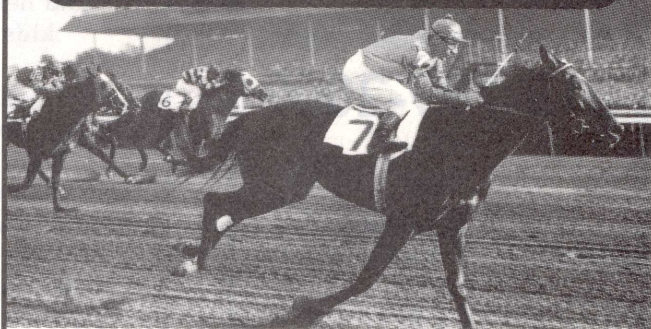
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Cheyenne Broadens ARCserve Agent Options

Cheyenne Software Inc. expanded its previously announced ARCserve Agent Option for UNIX to provide backup and restoration capabilities for HP-UX v8.07, Interactive System V/386 Release 3.2, SunSoft's Solaris v1.X and 2.0, IBM AIX 6000 v3.2 and DEC Ultrix v4.2 workstations on a NetWare network.

The addition of these Agent Options will further enhance ARCserve's existing capabilities in the UNIX market, which currently includes support for SCO UNIX System V/386 Release 3.2 and Interactive System V/386 Release 3.2.

Contact Cheyenne Software Inc., 55 Bryant Ave., Roslyn, NY 11576; (516) 484-5110.

Circle 394 on reader card

C-edit Offers Split Window Flexibility

Wisepoint Data Systems introduced C-edit, designed as a replacement for the UNIX vi text editor. It is a full-screen text editor that

provides split window capabilities unique. C-edit now runs on HP-UX.

With C-edit, programmers have the flexibility of having the same file in split windows, or different files in as many windows as memory allows. Programmers can readily cut, paste and move within same file or files. Additionally, system administrators can navigate through, edit, merge and maintain script files with new ease.

C-edit is priced at \$545.

Contact Wisepoint Data Systems, 3900 Birch St., Ste. 105, Newport Beach, CA 92660; (714) 250-2981.

Circle 380 on reader card

Maynard Drops Backup System Prices

Maynard Electronics announced price reductions of up to 15 percent on its Archive ST line of 1.35-GB quarter-inch tape backup systems and up to 13 percent on its Archive ST line of digital audio tape backup systems for UNIX workstation or PC users.

Prices for the Archive ST1350, Archive

ST4000 and Archive ST2000 quarter-inch systems range from \$1,410 to \$2,275. Prices for the DAT drives range from \$1,760 to \$2,275. Archive ST systems include commonly required installation hardware, including terminators, cabling, rails, jumpers and media.

Contact Maynard Electronics Division, Archive Corp., 36 Skyline Dr., Lake Mary, FL 32746; (800) 821-8782; (407) 263-3500.

Circle 377 on reader card

CA Extends Line Of Mission-Critical Solutions

Computer Associates International announced a series of products and enhancements to advance application development across disparate hardware platforms.

The company announced CA-RAMIS and CA-EASYTRIEVE Servers, available under MS-Windows, that provide seamless links to mainframe-resident CA-RAMIS and CA-EASYTRIEVE programs. CA extended its multiplatform commitment to life cycle management through new implementations



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Hewlett-Packard approved product developer specializing in MICR printing, (magnetic ink character recognition), for producing checks from Accounts Payable, Payroll and Claims applications. Call (800) 347-3638 or circle 200.

ARTECON INC.

Artecon is a leading systems integrator and manufacturer of value-added hardware and software products for the UNIX marketplace. Product lines include Opticals, Removables, Backups, Storage and Accessories. Call (800) USA-ARTE, FAX (619) 931-5527 or circle 242.

BEAR COMPUTER SYSTEMS INC.

MagicDisk includes Virtual Disk, Memory Disk and Disk Shadowing software products. ResQuet is a real-time shadowing-across-the-network product, for disaster recovery and related applications. Call (818) 577-0073 or circle 476.

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Cognos provides application development software for HP MPE V, MPE XL and HP-UX platforms. Call (800) 4-COGNOS or circle 117.

COMPUTER MARKETING INTERNATIONAL INC.

Independent distributor of new and refurbished HP Apollo workstations and peripherals. We provide in-house technical support and depot repair services. We are committed to providing 100% customer satisfaction on every order. Call 800-497-4CMI or circle 454.

COMPUTER SOLUTIONS INC.

Computer Solutions is an HP Channel Partner now in its 25th year of operation. Businesses include disaster recovery services, outsourcing, hardware sales, contract maintenance, depot repair and school software. Call (210) 672-6000, FAX (201) 672-8069 or circle 167.

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V-SYSTEMS INC.

VSI*FAX is UNIX facsimile management software designed to fax-enable any UNIX software application. V-Systems develops and markets UNIX communications software. For a limited time, VSI*FAX VAR in-house units for \$199. Call (714) 545-6442, FAX (714) 545-7653 or circle 128.

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Makers of Reflection Series Software. HP terminal emulation for PCs and Macintoshes. Call (800) 872-2829 or circle 178.

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X-Systems markets a complete line of disk, tape, memory solutions for HP workstations and servers. New products include: Fast SCSI 2 wide differential disk drives, bootable CD ROM's and a 96 GByte DAT stacker. Call (800) 886-5343 or circle 191.

HP Professional

of CA-PAN/LCM, an integrated change and configuration management system that controls the inventory of software components throughout the enterprise.

CA also introduced new target production environments for CA-TELON, a compre-

hensive application generator, which generates fully executable code for mission-critical applications on UNIX, VSE, OS/2 and PC-DOS platforms; CA-RET, an advanced WYSIWYG Windows-based report writer for CA's multiplatform databases; CA-

IDMS and C-DATACOM, which allows users to create complex reports with point-and-click simplicity. CA-OPTIMIZER II 2.0, a COBOL II optimization and debugging tool, that provides full support for SAA COBOL/370 release 1.0 was also announced.

Contact Computer Associates International Inc., One Computer Associates Plaza, Islandia, NY 11788; (516) DIAL CAI.

Circle 384 on reader card

Wyse, HP Sign On-Site Service Agreement

Wyse Technology Inc. and HP announced an agreement under which HP will provide on-site service and support to customers of Wyse's PCs and UNIX-based systems in the U.S. and Canada. Wyse also announced enhancements to its logistic support system for these products.

Under the agreement, end-user customers or VARs will continue to contract directly with Wyse for their service needs. Wyse will retain responsibility for problem resolution by determining the end-user need and contacting HP should an on-site visit be necessary. Communication between Wyse and HP will be transparent to end-user customers, who will have a single contact for any service issues relating to their Wyse system.

Systems covered under this agreement include Wyse PCs and the Wyse Series 7000i and Series 9000i, UNIX-based multiprocessing systems supporting from 150 to 400 users.

Contact Wyse Technology, 3471 N. First St., San Jose, CA 95134; (408) 473-1200.

Circle 378 on reader card

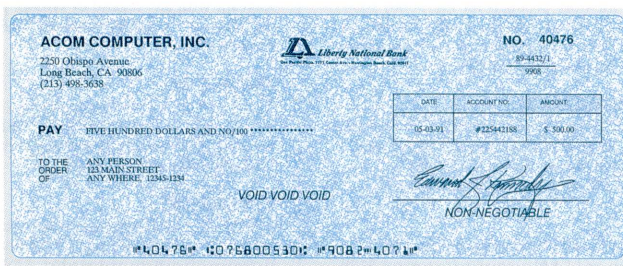
HP Ports Precision Engineering To 700

HP announced it has ported its HP Precision Engineering (PE) family of mechanical-engineering computer-aided design and product data management systems to the HP Apollo 9000 Series 700 Models 715/33, 715/50, 735 and 755 workstations.

The company said its benchmarks show a performance increase of up to 100 percent for HP PE/ME10, HP PE/SolidDesigner and HP PE/WorkManager systems running on the Series 700 workstations. The company also announced that by combining the Series 700 workstations with the HP CRX-482 graphics subsystem, users can double the performance of HP's solids modeling systems



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— both HP ME30 and the HP PE/SolidDesigner.

HP also introduced 3.5-inch disk drives with 2.1, 1.6 and 1.2 GB of formatted capacity for use by OEMs and system integrators. The HP C2490A, C2488A and C2486A series disk drives expand HP's current 3.5-inch product line and are designed to meet the storage requirements of mainframes, workstations, multiuser systems, array applications and high-end PC servers. They boast a 500,000-hour MTBF rating.

Logicraft Designs CD 4000 Expansion Cabinet

Logicraft announced the CD 4000, a CD expansion cabinet that contains up to seven CD-ROM drives and is fully compatible with Logicraft's 486Ware product line.

The CD 4000 is configured with industry standard CD-ROM SCSI drives and a SCSI interface card. It is available as a rackmount, a desktop unit or a tower unit. Up to three CD 4000s can be attached to each 486Ware server, allowing up to 16 simultaneous users access to 21 CD drives. Two CD 400s with up to 12 drives can be attached to DEC's InfoServer 150.

The CD 4000/486Ware configuration is accessible concurrently by all users on the network — PCs, Macintoshes, X terminals, VT terminals and workstations. The CD 4000 is priced at \$5,995 for a seven-drive unit. Contact Logicraft Inc., 22 Cotton Rd., Nashua, NH 03063; (603) 880-0300.

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IDE Introduces StP/IM For RDBMS

Interactive Development Environments Inc. (IDE) introduced Software through Pictures Information Modeling (StP/IM), a comprehensive database development environment for RDBMS.

Customers can use StP/IM to model all real-world data and their relationships and to generate SQL statements that work with any RDBMS. StP/IM supports widely accepted information modeling notations such as Bachman, Martin and Chen. Companies can use the multiuser StP/IM to model individual projects and complete enterprises. StP/IM is easily integrated with other best-of-class tools, so organizations are not locked into a proprietary suite of tools. It supports industry standard graphical user interface guidelines and CASE frameworks.

The product is priced at \$7,500. Contact IDE, 595 Market St., 10th Fl., San Francisco, CA 94105; (415) 543-0900.

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Proactive Enhances Q-Gen Report Writer

Proactive Systems enhanced Q-GEN report writer to support HP ALLBASE/SQL databases on HP 3000 systems. It already provides high performance reporting from IMAGE databases and KSAM/MPE files.

Q-GEN (also known as the FANTASIA REPORTER) also complements the FLEXIBASE/SQL database management utility for ALLBASE/SQL databases offered by Proactive Systems and is closely integrated with the FANTASIA product for laser printing and forms overlay support.

Contact Proactive Systems, Four Main St., Los Altos, CA 94022; (415) 949-9100.

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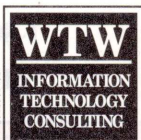
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Editorial Focus — Open Computing

■ **Standards Bodies Overview** — Gordon McLachlan looks at the proliferation of open systems and standards organizations whose decisions affect the technology investments of HP customers.

■ **Database Standards** — David Himes, technical chairman of the SQL Access Group, outlines the progress his organization has made toward a unified query language for accessing heterogeneous databases.

■ **Dreaming Of A Common Environment** — Some are calling them the "gang of six," but HP, IBM, Sun, Univel, SCO and USL swear their Common Operating System Environment (COSE) initiative is strictly in the interest of their customers. Bill Sharp examines what COSE could mean for HP workstation users in multiplatform UNIX environments.

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**Gordon
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On Burrowed Time

For most of us, careers are like car wrecks: You don't plan

them, they just happen. All you can do is pray you're lucky and don't get hurt.

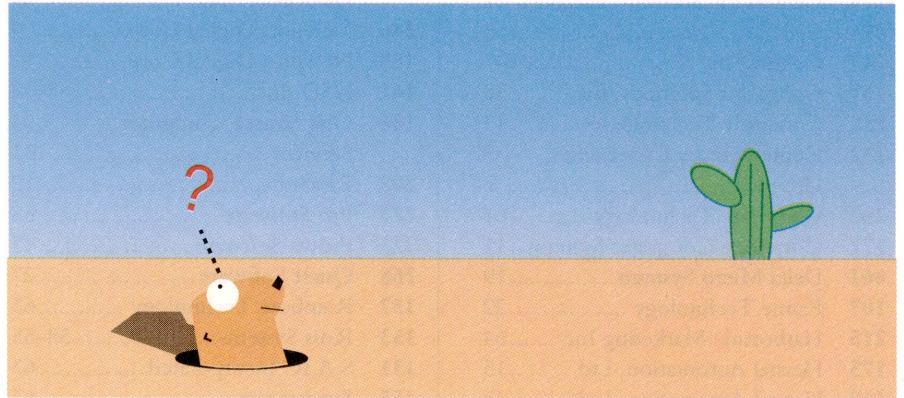
One way you can improve your luck is to generalize. For the first part of your career, you're pretty much forced to specialize. If you don't, nobody knows what hole to stuff you into. Career planning is nothing more than your relationship to the hole, and career growth a matter of getting out of the hole.

Let's pretend for a minute that we're burrowing rodents of one sort or another. We might be moles, happily digging our tunnels and snacking on grubs. It's a simple existence, as long as nothing comes in after us. If we're really lucky, the hole won't flood, and we won't have to come up to the surface. Life is rough up there for a mole.

Now let's be rascally rabbits. The hole is a base of operations, not the boundary of our existence. The opportunities are on the outside. If we're lucky, we find Elmer's garden. The hole is a great place to dash back into when things get rough. It has two openings, so we can bail out if a predator comes in one of them.

What you don't want to be is a prairie dog. Prairie dogs head for the hole at the first sign of trouble. Then, for some reason known only to themselves, they pop their heads out to see if whatever scared them is still out there. They're not really comfortable out in the open, but they don't have the luxury of staying underground.

In a sense, moles are specialists, while rabbits practice a more generalized survival strategy. I don't know what to



think about prairie dogs except that they wouldn't do what they do if they really thought it over. I may be anthropomorphizing the situation a bit, but I think I'd rather be a rabbit. The subterranean existence of the mole may be safer most of the time, but bunnies have better careers.

Holes In Your Resume?

Being a generalist does not mean being a dilettante. You do have to know what you're talking about. Rabbits are real good at what they do, which is reproduce, eat and run. If you want to be a career generalist, you should also have a survival strategy in place.

First is having a good hole to run back to. Even a generalist has to have some specific expertise to fall back on. Just make sure it's in a good area. You also need to know when to abandon a hole when it's no longer suitable. There's nothing worse than running back to the burrow, only to find the opening filled in, or a family of weasels in residence.

No matter how good a hole you pick, sooner or later you'll probably have to move on. Timing is everything. The best time to look for a new hole is while you still have one.

As fast as the technology is moving along, you have to be careful not to get too comfortable where you are right

now. All good things come to an end. Being a mainframe COBOL wizard might have been a great idea 10 years ago, and will pay the bills now, but it's not the wave of the future.

Even if you've got a cozy burrow, and the future's so bright you've got to wear sunglasses, you have to be prepared to move around a bit. Have you ever noticed that everybody wants people with only three to five years of experience? After you've spent that long on something, you stop learning, and start repeating yourself. You can see how your economic condition can go south real fast if your expertise levels off as your salary continues to climb. It doesn't take an MBA to see that it might be more cost-effective to replace you with someone half as experienced and half as well-paid.

The trick is to cultivate specialties that are complementary and prepare you for the new challenges coming down the pike. Downsizing and client-server applications are prime examples. They require a knowledge of mainframes, databases, networks, PCs and UNIX, but more than that, they need people who can see the big picture, and fit those puzzle pieces together. If you stack your tours of duty correctly, your experience will be a plus, not a negative. ■

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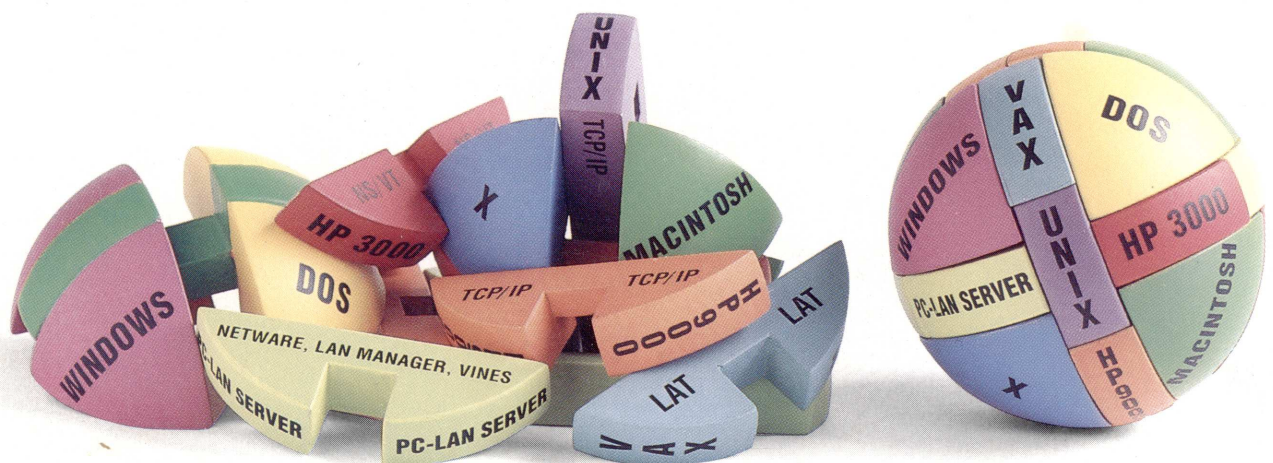
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